Volume 93 Number 5

STEEL

For forty-eight Years—IRON TRADE REVIEW

PRODUCTION • PROCESSING • DISTRIBUTION • USE

The Week in Perspective

SECOND quarter financial statements, disclosing that all important producers of steel save one reduced their losses from the first quarter and that three even emerged "into black," are happily timed to neutralize a reduction of 2 points in production to 55 per cent (p. 13) and to supply some encouragement as the industry approaches the ordeal of trial-by-code at Washington. Eleven makers, representing 82 per cent of capacity, lost only $16,698,739 in the second quarter (p. 9), compared with $33,926,516 in the first quarter and $36,223,931 in the second quarter of 1932. Reduced to ingots produced, the industry's loss in the second quarter was $3.42 per ton; in the first quarter it was $13.70. United States Steel showed an operating profit in June; Bethlehem a slight net for the quarter.

Open Shop the Great Issue at Washington

Not only iron and steel but also all industry is on the anxious seat this week as the steel code comes up for hearing at Washington (p. 11). Organized labor, long thwarted in its ambition to capture the industry, sees the prize within reach, and having steel in its bag would move on to other open-shop industries. Anticipating success, the American Federation of Labor is chartering federal unions to corral all employes of a plant, regardless of craft, in one body . . . . Already labor, acquiring a "class consciousness" through much flattery of Washington, is in a restless mood, strikes being reported (p. 12) . . . . Iron ore miners in the Lake Superior district have been placed (p. 10) on a straight 8-hour day.

Foreign Steel Trade Now on Upgrade

In recent breath-taking achievements in the air, steel has been a silent partner. . . . When General Balbo's 24 seaplanes, flying to the Century of Progress exposition as Italy's gesture of friendship, renewed their supply of oil at Chicago it was from pressed steel tanks (below) of special design. . . . A steel propeller took Wiley Post eastward from New York to Alaska on his solo flight around the world, but even steel cannot stand being nosed over, and rush shipment (p. 18) of a new blade was made.

Globe Trotters of Air Rely on Steel

Less spectacularly but more profitably, steel also is going around the world in the form of exports. The June showing of a decline of 27 per cent, to 102,581 tons, is mitigated by the fact, that scrap is entirely responsible for this loss and other products actually registered a gain (p. 14). Imports in June, up 30 per cent to 34,368 tons, narrowed the favorable balance of trade. . . . Europe also is experiencing an easier situation in foreign trade, the London cable reporting (p. 59) that the outlook for tin plate exports is less satisfactory, with the Con-

Hundreds of bilged steel barrels, made by the Pressed Steel Tank Co., on the navy pier at Chicago ready to supply fresh oil to the 24 Italian seaplanes of General Balbo

tinent generally noting duller exterior markets. The revived European steel entente has fixed export quotas on the basis of a monthly production of 500,000 tons of raw steel. . . . Reviewing the past quarter, definite progress is evident (p. 17) and the renaissance of the entente promises more orderly production and marketing.

Artist Discards Brush for Sandblast Nozzle

At the Chicago exposition General Balbo's flyers could have inspected unusual treatment of 18-8 stainless steel. Murals have been sandblasted on this special steel by the process of a New York artist (p. 30), whereby tough resist paper is mounted on the steel, the design is cut and three types of blast are used to obtain various tones. . . . Stainless steel is being used in an eastern city for street signs (p. 35), the plan having the additional merit of providing employment. . . . Another type of resistant is acid-proof tile for lining steel tanks (p. 29). A steel wire or expanded metal lining is spot welded to the tank, this lining covered with acid-proof cement as a base for the tile. Between the shell and tile an exceptionally strong bond results.

Autos Pose New Problems for Sheetmakers

Difficulties in planishing full-finished sheets have increased as demand for wider widths has grown, particularly those between 48 and 72 inches. In a new type of mill (p. 28) two short rolls having vertical adjustment, one bearing against the upper planishing roll and the second against the lower roll, are utilized to exert pressure as required by the width of the sheets and the amount of work. . . . Full-finished sheets will be formed to radical new designs in 1934 automobiles, judging from preliminary plans showing (p. 15) a pronounced veer to extreme streamlining. August opens with assemblies bowing before seasonal forces, Henry Ford curbing driveaways, the long-pull outlook obscured by the Washington program but otherwise basically good.

Crane Performance in Black and White

Proper adjustments in control apparatus for cranes and hoists are required to provide economical and efficient operation of these important materials handling units. A thorough understanding of service conditions and means for meeting them are afforded by a study of motor speed-torque curves. These curves, plotted on charts (p. 25), picture graphically all conditions of operation and are invaluable to engineers responsible for crane installation and performance. By their use, a complete hoisting and lowering cycle may be followed in detail. An example of their value is the intelligent use of dynamic braking to reduce wear of brakes.

The VOICE of INDUSTRY

Communications appearing here do not necessarily reflect the opinion of STEEL *or of its editors.*

"New Deal" in Credit Essential

To the Editors:

There are a number of articles appearing in the different periodicals discussing the attitude of industry in regard to the recovery act. Almost universally the opinion is expressed that a large amount of blame attached to industry has brought about this legislation. As one who is interested in industry, I suppose it is not ethical that I should point out that some of the blame for the conditions which prompted the new action by the government are traceable to others than industry.

Industry alone cannot produce a prosperous condition in the United States. Industry and labor combined, even if they were to be in perfect accord, could not produce prosperous conditions, even if they were to have, as they are supposed to have, under the industrial act, the perfect support of the government regarding their own activities. It seems to me that it is only fair to industry that the need of co-operation between industry and finance be emphasized and that the shrinking up of credit within the last several years, quite logically bears its share of responsibility for the need of this recovery act.

If this is true, then we must not expect too much for the effectiveness of this experiment, unless we have parallel with it, the proper support of industry by finance through the necessary decrease in credit stringency. We are instructed by the government to raise wages and shorten hours. In some industries this becomes a hardship without relief from the present credit stringency. I realize the government has this in mind; but it does seem to me that the editorials that appear from time to time are not stressing this point in proportion to its influence on the hoped for improvement from present new government control of industry.

The unfortunate condition brought about through illegal, unethical practices by bankers and financiers has quite as much to do with the present need for a "new deal" as has any illegal or unethical practice in industry. Many industrial organizations find their available funds reduced as a result of the banking situation of today and when this is coupled with the stringent conditions of credit, it is apparent that to raise wages, shorten hours, and otherwise conform to the requirements of the national industrial recovery act, becomes a hardship for such industrial concerns.

To relieve this condition a "new deal" in credit is absolutely essential and the small manufacturing institution is frequently the one which needs it most, but whose problems are least considered because such organizations as the National Finance Corp., are not organized to even consider the problems of the small manufacturer.

It would seem to me, therefore, that a great deal of help could be secured if this point were emphasized editorially so that the proper action could be insured on the part of the government.

I am outlining these views to you since it is a point that is not much discussed today and it is entirely overlooked in the editorials that appear from time to time relative to the prospects ahead under this new N. R. A.

FOUNDRY PRESIDENT

Steel Losses Greatly Reduced In 2nd Quarter, to $3.42 a Ton

IRON and steel staged a notable financial recovery in the second quarter. Eleven integrated producers representing 54,789,000 gross tons of capacity, or 82 per cent of the country's total, incurred aggregate losses of $16,698,739 in the second quarter, compared with deficits totaling $33,926,516 in the first quarter. In the second quarter of 19932 these companies' loss was $36,223,931.

Assuming the experience of these 11 producers to be typical of the entire industry, and with steel ingot production in the second quarter being 5,962,364 gross tons, the indicated loss per ton of ingots produced in the second quarter was $3.42. The indicated loss for the entire industry in the first quarter being over $41,000,000 and production only 3,026,829 tons, the average loss per ton of ingots produced in that quarter was $13.70.

Including the Sharon Steel Hoop Co., which has reported for the entire half year only, the net deficit of 12 producers in the first half of 1933 was $50,882,681, compared with $64,902,416 in the first half of 1932.

Of the companies reporting thus far, Inland Steel Co., Wheeling Steel Corp., and Granite City Steel Co. show a profit for second quarter, all others staying "in the red" but greatly reducing their losses. National Steel Corp., which has consistently been reporting a profit, is not included.

Steel Corp. Halves Loss; Wages a Drag

UNITED STATES STEEL CORP. in the second quarter almost halved the loss it incurred in the first quarter, the reduction being from $16,730,271 in the first quarter to $8,627,367 in the second quarter. In both instances the reduction in surplus, resulting from the payment of 50 cents on the preferred stock, is excluded.

Operating results in the second quarter showed a continued improvement. April ran up a net deficit of $736,380 prior to deduction of depreciation and other charges, while the June showing before charges was a net of $4,165,870. After charges, the deficit in June was $488,729, while in June, 1932, it was $4,687,290.

The detailed showing of the Steel corporation for the second quarter follows:

Earnings for the quarter resulting from operations after deducting all expenses incident thereto, including ordinary repairs and maintenance of plants and taxes		$ 4,881,554
Charges and allowances for depletion, depreciation and obsolescence		10,606,589
Deficit		$ 5,725,035
Interest charges for the quarter:		
On bonds of subsidiary companies	$1,298,094	
On United States Steel Corp. bonds outstanding	3,459	
		1,301,553
Total deficit from operations		$ 7,026,588
Add, proportion of overhead expenses (of which taxes alone are $1,359,702) of the Lake Superior iron ore properties and Great Lakes transportation service, normally included in the value of the season's production of ore carried in inventories, but which because of curtailments in tonnage of ore to be mined and shipped in 1933 is not so applied		1,600,779
		$ 8,627,367
Dividend for the quarter on stock of United States Steel Corp.:*		
Preferred, ½ per cent		1,801,405
Total deficit for the quarter provided from undivided surplus		$10,428,772

*Dividend payable: Preferred, Aug. 30, 1933, to stockholders of record Aug. 1.

Beginning with the third quarter the wage situation presents a complication and tempers the improvement. Coal wages were increased July 1 and in other subsidiaries, except the transportation ones, July 16.

The advance in wages on the latter date restored the compensation of approximately 90 per cent of all employes to about 88 per cent of the rates paid between August, 1923, and October, 1931. The incidence of wage advances, based upon the July payroll, is in excess of $2,000,000 a month.

Bethlehem Reports Operating Net

BETHLEHEM STEEL CORP., Bethlehem, Pa., made a showing in the second quarter better than in the first quarter of 1933 and the second quarter of 1932.

As shown by the following table, the deficit for the second quarter was reduced to $3,312,846, after charges for depletion and depreciation. Prior

Deficits of Leading Steel Producers Are Less than Half of First Quarter

All Financial Statistics Are Deficits Except Where Asterisk Denotes a Profit

	First Quarter 1933	Second Quarter 1933	Second Quarter 1932	First Half 1932	First Half 1933	Annual Ingot Capacity G. T.
United States Steel Corp.	$16,730,271	$ 8,627,367	$20,452,173	$33,670,722	$25,357,638	27,630,000
Bethlehem Steel Corp.	5,769,451	3,312,846	4,671,260	8,357,029	9,082,297	9,457,000
Republic Steel Corp.	2,453,435	407,451	2,744,826	5,221,119	2,860,886	4,848,000
Jones & Laughlin Steel Corp.	2,060,645	1,682,801	2,110,851	4,509,940	3,743,446	3,420,000
Youngstown Sheet & Tube Co.	3,473,370	2,207,592	3,288,861	6,346,594	5,680,962	3,240,000
Inland Steel Co.	1,012,053	25,760*	619,982	1,440,523	986,293	2,000,000
Wheeling Steel Corp.	802,419	482,143*	686,324	1,509,461	320,276	1,500,000
Otis Steel Co.	700,371	257,253	639,009	1,340,170	957,624	1,014,000
Colorado Fuel & Iron Co.	750,695	803,765	795,190	1,194,468	1,554,460	840,000
Gulf States Steel Co.	93,481	18,646	215,455	359,652	112,127	480,000
Sharon Steel Hoop Co.	.....	.....	.....	941,900	257,426	450,000
Granite City Steel Co.	80,325	111,079*	.....	10,838	30,754*	360,000
	$33,926,516	$16,698,739	$36,223,931	$64,902,416	$50,882,681	55,239,000

to these charges there was a balance of $7,009.

	2nd quarter 1933	1st quarter 1933
Total income of the corporation and its subsidiary companies	$1,669,559	*$ 866,144
Less—Interest charges	1,662,550	1,658,381
Balance	$ 7,009	*$2,524,525
Less—Provision for depletion and depreciation	$3,319,855	3,244,926
Deficit for the period	$3,312,846	$5,769,451

*Deficit.

Current operations of Bethlehem are at 50 per cent, against an average of 28.7 per cent in the second quarter and 15.8 per cent in the first quarter.

This 50 per cent rate, according to E. G. Grace, president, will be maintained in August. With bookings on hand and what might be expected from present more active channels the rate could be held without a pick up in railroad and structural demand, he said.

Monthy expenditures of Bethlehem and its subsidiaries have been increased $700,000 by recent increases in wages and salaries, in keeping with the spirit of the steel code.

Refusing to predict the showing for the third quarter, Mr. Grace said that by the time the next Bethlehem quarterly meeting rolls around "we will at least have had the experience of another interesting three months."

J & L Loss Is Reduced to $1,682,801; Preferred Pays

Jones & Laughlin Steel Corp., Pittsburgh, and subsidiary companies report loss of $1,682,801 in the second quarter, compared with loss of $2,060,645 in the first quarter and loss of $2,110,851 in the second quarter of 1932.

For the first six months of 1933, total loss is $3,743,446 against $4,509,940 loss in the first half of 1932.

An operating loss of $384,206 was incurred in the second quarter of 1933. Depreciation charge of $1,201,555 was made, and interest on bonds was $97,040. Preferred stock dividends made total charged to surplus for the quarter $1,829,586.

The company declared a dividend unchanged from last quarter of 25 cents a share on cumulative 7 per cent preferred stock, payable Oct. 2 to record Sept. 13.

Otis Loses $257,253

Otis Steel Co., Cleveland, reports net loss of $257,253 in the second quarter, compared with loss of $700,371 in the first quarter of 1933 and deficit of $639,009 in the second quarter of 1932. The loss for six months of 1933 is $957,624, against $1,340,170 in the same period last year.

Youngstown Sheet & Tube Deficit Is Cut a Third

Youngstown Sheet & Tube Co., Youngstown, O., reports a loss for the second quarter of 1933, after all charges, including depreciation and depletion, of $2,207,592, compared with a loss of $3,473,371 in the first quarter and a loss of $3,288,861 for the second quarter of 1932.

Gross income after deducting charges for repairs and maintenance of plants, was $1,301,177 in the second quarter, against $425,263 in the preceding quarter. Total loss of the first half of 1933 was $5,680,962, compared with a loss of $6,346,597 in the first half of 1933.

On June 30 the company had cash and investments in government and marketable securities (under quoted value) in the amount of $12,779,366.64; ratio of current assets to current liabilities was 12.89 to 1.

Preferred dividend payable July 1, amounting to $206,250, was not paid. Total preferred dividends in arrears amount to $1,031,250.

Inland Makes Profit

Inland Steel Co., Chicago, passed from the deficit to the profit area in the second quarter, reporting a net profit of $25,760.74, compared with a net loss, after charges, of $1,012,053 in the first quarter. Net earnings from operations, after administration expense, repairs and maintenance, totaled $1,165,841.46, from which is deducted $1,140,080.72 for bond interest, depreciation and depletion.

Wheeling Net Is $482,143

Wheeling Steel Corp., Wheeling, W. Va., reports net profit of $482,143, after all charges, in the second quarter of 1933, against loss of $802,419 in the first quarter. The company's loss for the first six months was $320,276, compared with $1,509,461 in the same period of 1932.

Republic Showing Improved

Republic Steel Corp., Youngstown, O., cut its loss over $2,000,000 in the second quarter, experiencing a net deficit, after charges and guaranteed Trumbull-Cliffs preferred dividend, of $407,451.84, compared with net loss of $2,453,435 in the first quarter. The net gain from operations, after deductions for maintenance and repairs, was $2,379,368.66, minus interest on indebtedness of $794,764.41, leaving a profit of $1,584,604.25. But charges for depreciation and the pre-

(*Please turn to Page* 55)

Steel Code Hearing Opens on Monday

AMERICAN Iron and Steel institute officials and leading executives of the industry concentrated in Washington Monday for the opening of the hearing on the iron and steel code, conducted in the department of commerce building auditorium.

K. M. Simpson, president of the International Chromium Process Corp., is the deputy administrator in charge of the hearing. His technical advisor is John Van Wicheren Reynders, consulting metallurgist, and formerly associated with the Pennsylvania Steel Co. and Central Iron and Steel Co.

The labor adviser had not been formally appointed up to last Friday, but was expected to be John Frey, head of the metal trades department of the American Federation of Labor, Washington.

Signers to the steel code were to be announced in Washington Monday morning. It was expected by that time that some recalcitrants would have accepted it.

A national council for the secondary raw materials industry, including scrap iron, was organized in New York, July 25, with Ivan Reitler, of the American Smelting & Refining Co., New York, chairman.

The Nonferrous Foundry Association for Industrial Recovery was formally organized at Chicago, July 19.

Canadian Ingot Output Is Up 37 Per Cent in June

Steel ingot and direct steel castings produced in Canada in June at 31,602 tons show a 37 per cent increase over the May figure of 23,126 and the second best monthly total this year. In six months, output has been 130,464 tons, compared with 180,488 tons a year ago.

Foundry pig iron was produced in Canada in June for the first time since Feb. 14, total for the month being 857 tons.

Production of ferroalloys in Canada in June was 910 tons, compared with 1030 tons in May, according to the Canadian bureau of statistics.

Ore Miners on 8-Hour Day

Iron ore miners in Minnesota, Wisconsin and Michigan, recently working 9 and 10 hours a day, have been put on straight 8-hour day. Wages have been advanced a maximum of 15 per cent. This brings the Lake Superior iron ore industry in line with the national recovery program.

WINDOWS OF WASHINGTON

WASHINGTON

Crisis Comes on Steel Code

• • •

Miss Perkins Inspects Mills

• • •

All Presidents Favor Labor

MORE is at stake in Washington this week for industry than in any week since the republic was founded. At the hearing starting Monday on the code it has submitted to NRA, the iron and steel industry will attempt to maintain its open-shop position; organized labor is out to riddle the machinery set up by the industry for collective bargaining, and to claim the right to organize it.

A deadlock is a very possible outcome of the hearing, with wage rates and hours secondary to the open shop and the issue going up through Gen. Hugh S. Johnson, administrator of NRA, to the President himself. For the President the decision will be crucial and of the kind he dislikes, because it must be a forthright one and either way it will cost valuable support for his recovery program.

The burden of opinion close to the President will be on the side of labor. But, the co-operation of so powerful an industry as iron and steel is highly desirable, and leading it to Calvary on the matter of the open shop might supply a rallying point for other unorganized industries, including the widespread metalworking and automobile ones. The President may be called upon to make good his stand against the "aggression" of labor.

FOR iron and steel, which incidentally is entering the first major public contest without the counsel or strategy of Judge Gary, the hearings starting Monday unquestionably will put executives through the severest grilling of their lives.

Encouraged by practically all of the "breaks" thus far in code hearings and decisions, the American Federation of Labor intends putting executives on the defensive. No skeletons will be left in the closet; the new-born employe representation plans will be held up to ridicule; the reluctance of the mills to abandon the 7-day week and the 12-hour day will be paraded.

Secretary of Labor Perkins, who has scorned the new company unions as "war bridegrooms," was at Homestead and other Pittsburgh district mills last week personally inspecting labor conditions.

It seems almost certain that the provisions in the steel code for a 40-hour week with minimum rates ranging from 25 cents in the South to 40 cents in the North will not be acceptable to the government.

The hearings last week showed quite conclusively that it is not the intention either of labor leaders or of General Johnson and his aides to permit the 40-hour week provided in the textile code to be used as a precedent for other codes.

Shipbuilders went to Washington with an offer of a 40-hour week, with minimum wages ranging from 35 cents in the South to 40 cents in the North. Organized labor attacked this immediately and proposed a 30-hour week with a minimum pay of $25 per week, which figures out at 83 cents an hour.

The hearings became deadlocked on this question and General Johnson proposed a code for the industry. It was in the nature of a compromise, and provided for a 32-hour week on government shipbuilding and a 36-hour week on commercial work. The minimum rate ranges from 35 to 45 cents. In this case, the compromise leaned toward the 30-hour proposal by labor.

The controversy over hours and wages in the oil industry is not yet settled. The industry went to Washington with two codes. The one sponsored by the American Petroleum institute provided for a 40-hour week with wages from 40 cents to 47 cents an hour. The code submitted by independents provided for a 40-hour week but with a flat rate of 50 cents per hour throughout the country.

Labor representatives attacked both codes and countered with a proposal for a 30-hour week and a $4.75 per day minimum wage. This figures out at about 79 cents per hour.

If labor's procedure in these hearings is indicative of the policy it will pursue throughout the remaining hearings, it is quite evident that each industry presenting a code providing for hours ranging from 36 to 40 per week will be met with a counter offer by labor of a 30-hour week. Apparently, the government expects the final figure to be a compromise ranging somewhere between the offers by labor and industry.

INDUSTRY is usually represented as making or breaking governments and as crushing labor through the connivance of the government, but the fact is that labor has consistently had the advantage at Washington under both Republican and Democratic regimes.

Under the Republican Roosevelt, big business was a continuous target for the government's shafts. Under President Wilson, labor was given a separate post in the cabinet, and the record of labor secretaries shows them more persistent for their cause than the secretaries of commerce have been for industry.

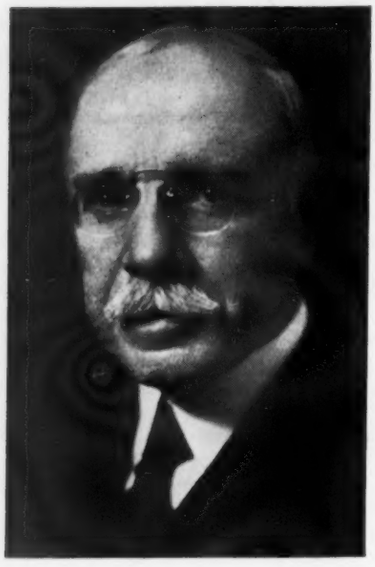
It was President Wilson who asked congress to pass the Adamson law, giving railroad employes the 8-hour day in the stress of the war. Not many months after he became president Mr. Harding invited Judge Gary and other steel leaders to Washington and asked them to abolish the 7-day week and 12-hour day—which was done.

Through the Hoover regime, indus-

try was repeatedly besieged to hold up the wages of labor despite falling commodity prices and a declining cost of living. Recalling its battles to win the 8-hour day and the rebuff the past few years to a 5-day, 6-hour week, the President's blanket code with a maximum of 35 and 40 hours weekly for industrial and clerical labor appears a stunningly easy victory.

NO LITTLE concern is expressed over the "labor consciousness" which General Johnson's NRA has been building up.

Labor's purchasing power has been enthroned as the one needful factor in recovery. Production of commodities must not be permitted to overrun it; no matter how impoverished



J. V. W. REYNDERS
Technical adviser to K. M. Simpson, NRA administrator hearing the steel code

industry may be after almost four years of depression, and no matter that industry shielded wages on the way down, wages must now be advanced.

Wage rates in the textile, shipbuilding and blanket codes are minimums, it is emphasized. The prospect is that, if labor is organized as the American Federation proposes, collective bargaining will be indulged in vigorously.

Already, there have been strikes in the garment trade which have taxed the department of labor to check; solicitous as the department is for labor, it would be a paradox if unemployment should come as a result of strikes and lockouts at a time when re-employment is being pushed.

Strikes and rioting have occurred in some steel company coal mines in western Pennsylvania, the chief point being the recognition of new unions. A Pittsburgh district sheet mill is down as a result of a strike, and at Buffalo disturbances have been reported.

Heretofore, the American Federation has organized principally by crafts or vertically. Now it is chartering what it terms federal labor unions, to organize horizontally across industry. In other words, all employes in a steelworks would be herded into one union, and there would be no breakdown according to trades, such as machinists, electricians, etc.

A statement by the American Federation is to this effect: "The federation is pursuing its traditional policy in organizing the workers in the automobile, rubber, steel and miscellaneous industries. Federal labor unions have been formed * * *. The officers and members of these federal unions will be free to choose federation representatives to speak for them and to represent them in wage negotiations* * *."

THERE is also the possibility that NRA, now being swamped by codes from innumerable small industries, may conclude that the same purpose can be accomplished by pushing the blanket code, and that this code may be applied where a division within an industry cannot be bridged.

So far as steel is concerned, the blanket code would compel a revision in the work week from 40 hours to 35, but would not materially affect labor rates except in a few of the smaller districts. The issue of the open shop, however, would remain.

Strictly speaking, steel does not come under the blanket code. NRA is attempting to get all industry under it pending the adoption of specific codes, but if the steel code is made effective by Aug. 31 it would not affect steel.

Some smaller producers are reported veering toward the blanket code and abandonment of the 12,000-word legally-phrased document submitted July 15. This is on the theory that the rigid control of the American Iron and Steel institute over prices would not be enforced; at least one interest is represented as preferring government auditors to institute auditors going over its books.

Machinery for clarifying and interpreting the blanket code has been set up under Gen. T. H. Hammond, of the Whiting Corp., Harvey, Ill. Washington prefers answering questions by mail of telegraph rather than in person.

The moot section of the blanket code is paragraph 7, which can be interpreted as forbidding any reduction in weekly compensation despite a reduction in the number of hours work. This, it is believed, may result in wholesale dismissals where part-time employes can be economically retained.

IT WILL make a big difference to reinforcing bar and mesh interests whether highway work is pushed more vigorously in the East than the West by the public works administration.

New York and Utah are the first states to begin actual work on highways. Approved projects in Utah include five stretches of low-cost bituminous totaling 25.8 miles and two stretches of concrete, for 10.9 miles. Of the six projects being started in New York, all are concrete, for a total of 25.2 miles, and there are six bridge projects.

Thus far $750,000,000 of the $3,300,000,000 for public works has

K. M. SIMPSON
Deputy NRA administrator presiding over the steel code hearing

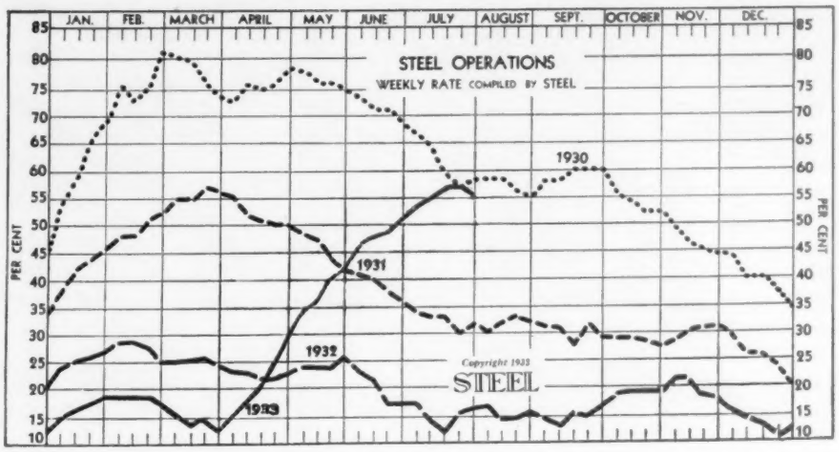
been allotted. This includes $238,000,000 for the navy, $400,000,000 for roads and $65,000,000 for purely federal work. It is claimed that these projects set up a requirement for 13,070,788 man-weeks of labor. The peak of road work is expected in September.

A $10,000,000 purchase of machinery for the Boulder (formerly Hoover) dam project has been approved.

In round numbers, 80,000 tons of steel will be required for the 21 naval vessels on which shipbuilders' bids were opened Wednesday. Owing to the difficulty in breaking down bids, due to reservations on time required and compliance with the new shipbuilding code, it may be several weeks before awards can be made.

Bethlehem Shipbuilding Corp. apparently was low on the heavy cruis-

(Please turn to Page 55)



Steelmaking Off 2 Points to 55%; Going Down This Week

REDUCTIONS at Pittsburgh, Chicago and Wheeling more than offset slight gains at Buffalo and New England and a stationary position in other districts, and thus the national steel rate for the week ended July 29 went off 2 points to 55 per cent. This was the first week since late March that the steel rate has declined.

This week Pittsburgh, Buffalo and New England mills will curtail and a recession to 54 per cent or less is indicated. Details for various districts follow:

Chicago

Ingot production declined 2 points the past week to 58 per cent as a result of reduced schedules at a few centers. Blast furnace operations, however, are unchanged with 13 of 36 steelworks stacks and one merchant unit active. While steelmaking operations are believed to have passed their peak for this period, expectations are for only a small decrease prior to the fall when a seasonal upturn, aided by anticipated requirements of railroads and for building construction, is looked for.

New England

Due to temporary repairs to one works, the steel rate in New England, after touching 90 per cent last week, is down to 82 per cent this week.

Buffalo

Operations in the Buffalo district were up a point last week but will show a 6-point drop this week to 57 per cent, due to withdrawal of three open hearths at Bethlehem's Lackawanna plant. The equivalent of 21 furnaces was making steel this week, with prospect of their continuance for next week.

Pittsburgh

Steelmaking in Pittsburgh was at 49 per cent last week, down 2 points. For this week, ingot production is likely to fall another point to 48 per cent. Another blast furnace was lighted in the Pittsburgh district last week when American Steel & Wire Co. blew in a Donora, Pa., stack. There are now 23 out of 53 steelworks blast furnaces blowing here. Individual rates are as follows: Carnegie Steel Co., 14 of 32 in the immediate Pittsburgh district; Jones & Laughlin Steel Corp., 6 of 11; and both Pittsburgh Crucible Steel Co. and Pittsburgh Steel Co. one of two each. National Tube Co. is operating one of four at McKeesport, Pa., and American Steel & Wire Co. one of two at Donora, Pa. In addition, at Johnstown, Pa.. Bethlehem Steel Co. is operating four of seven stacks.

Approximately 90 of 201 open-hearth furnaces of varying sizes in plants of six leading producers were active through last week. Several, including a large 275-ton furnace, were down for repairs and a battery of six open hearths alone at one works was temporarily taken off.

Cleveland

Steel ingot production during the week ended July 29 held at 79 per cent, unchanged from the preceding week. Each of the two steelworks here and the one at Lorain has one open hearth down for repairs. At least two of these may be relighted this week. Interlake Iron Corp. has relighted one of its two blast furnaces at Toledo, O.

Wheeling, W. Va.

District steelmaking declined 10 points last week to 80 per cent, due to the fact several open hearths were temporarily off due to repairs. One steelmaker has had operations curtailed due to labor difficulties. Out of 37 open hearths in three leading steelmakers' plants, 28 and 29 are active alternately.

Youngstown

Steel output here raised slightly above 67 per cent last week, and is

Operating Rate of the Steel Industry, by Weeks

All figures except monthly open-hearth and bessemer totals of American Iron and Steel institute are percentages, based on reports from Pittsburgh, Chicago, Youngstown, eastern Pennsylvania, Cleveland, Birmingham, Buffalo, Wheeling, New England, St. Louis, Lorain, Detroit districts. Weeks end Saturday. STEEL's weekly estimates take into account only actual available capacity, which is less than Institute's total.

1932	1st Week	2nd Week	3rd Week	4th Week	5th Week	STEEL's Average	Institute's Monthly Total tons	Institute's Monthly Average
Jan.....	22	25	26	27	28.5	25.7	1,484,991	26.41
Feb.....	28.5	27	25	25	....	26.4	1,481,253	27.40
March....	25	25.5	24.5	23	....	24.5	1,433,337	24.55
April.....	23	22	22	23	24	22.8	1,259,629	22.40
May.....	24	24	25.5	23	....	24.1	1,125,243	20.01
June.....	21	17	17	17	....	18.0	912,757	16.23
July.....	14.5	12	15.5	16.5	16.5	15.0	806,722	14.92
Aug.....	14.5	14.5	15.5	14.5	....	14.7	846,730	14.50
Sept.....	13.5	15.5	15	17	....	15.3	991,858	17.64
Oct.....	18	19	19.5	19.5	19.5	19.1	1,087,058	19.33
Nov.....	21	21	19	17.5	....	19.6	1,032,221	18.36
Dec.....	16	15	14	12	13	14.0	861,034	15.31
1933								
Jan.....	15.5	17	18	19	....	17.4	1,030,075	18.23
Feb.....	19	19	19	17	....	18.5	1,086,867	20.83
March....	15	13.5	15	14	15.5	14.6	909,886	15.50
April.....	17.5	20.5	25	29	....	23.0	1,362,856	25.08
May.....	33	36	40	43	....	38.0	2,001,991	34.11
June.....	47	48	49	51	54	49.8	2,597,517	45.96
July.....	55	57	57	55	....	....	.....	.....

expected to hold near that rate this week. Fifty-six open hearths are melting.

Republic Steel Corp. and Youngstown Sheet & Tube Co. each lighted a blast furnace last week, bringing the number of active stacks in this district up to 16 out of 31, the highest number since early 1931.

Birmingham

An unexpected decision to continue the rail mill of the Tennessee Coal, Iron & Railroad Co. in operation retains the 77 per cent ingot rate for this district. The Tennessee company has 8 of its 17 open hearths operating, and Gulf States 5 out of 6 units.

Eastern Pennsylvania

Operations on the central eastern seaboard are unchanged at 42 to 43 per cent.

June Exports Largest, Except May, In Two Years; Imports Make Gain

DECLINE of 27 per cent in tonnage of iron and steel scrap exported in June, compared with May, caused a drop in total steel exports of 20,488 tons, to 102,581 tons, compared with 123,069 tons in May, according to the iron and steel division of the bureau of foreign and domestic commerce.

In face of this loss of tonnage, June exports exceeded those of April by more than 2000 tons and were, except for May, the largest in export trade of any month since July, 1931. If scrap were excluded from consideration, a gain of 4009 tons in the other 60 classes of steel and iron would be revealed.

Imports, at 34,369 tons, were 8073 tons, or 30 per cent greater than in May, thus re-establishing the upward swing shown in this trade during March and April and interrupted in May.

Exports for first half of 1933 exceeded those of the corresponding period of 1932 by 205,534 tons, the growth of exports of scrap alone more than accounting for this gain. However, gratifying increases were made in seamless casing and oil-line pipe and tin plate, which offset in some measure the losses in tonnage of such products as black steel sheets, skelp, plain shapes and wire rods. The six-month total for the import trade was 56,517 tons smaller than for the corresponding period of 1932, resulting from marked reductions in receipts of such items as concrete reinforcement bars, pig iron, merchant steel bars, sheets and shapes.

FOREIGN TRADE OF UNITED STATES IN IRON AND STEEL

Gross Tons

	1933		1932	
	Imports	Exports	Imports	Exports
Jan.	21,892	56,720	31,053	40,660
Feb.	19,748	63,936	26,738	40,492
March	22,114	80,567	41,031	49,927
April	28,061	100.395	35,935	58,086
May	26,295	123.069	39,751	80,477
June	34,368	102,581	34,494	52,081
6 mo.	152,478	527,268	208,995	321,734
July	.....	.....	18,005	52,558
Aug.	.....	.....	23,623	32,955
Sept.	.....	.....	29,241	36,038
Oct.	.....	.....	33,693	41,226
Nov.	.....	.....	34,924	56,041
Dec.	.....	.....	29,390	54,118
Total	.....	.....	378,282	594,691

ORIGIN OF JUNE IMPORTS

Gross Tons

	Pig iron	Manganese ore	Ferro-manganese
Netherlands	5,969	.....	.....
Norway	102	.....	547
Canada	112	.....	6,233
British India	5,047	.....	.....
Gold Coast	.....	5,799	.....
France	.....	.....	63
Italy	.....	.....	68
Total	11,230	5,799	6,911

	Sheets, skelp and sawplate	Structural shapes	Steel bars	Hoops and bands
Belgium	579	1,828	1,205	986
France	28	1,172	230	588
Sweden	4	.....	64	3
United Kingdom	5	.....	22	106
Japan	10	.....	.....	.....
Germany	.....	329	105	270
Austria	.....	.....	35	.....
Norway	.....	.....	183	.....
Canada	.....	.....	.....	2
Total	626	3,329	1,844	1,955

UNITED STATES IMPORTS OF IRON AND STEEL PRODUCTS

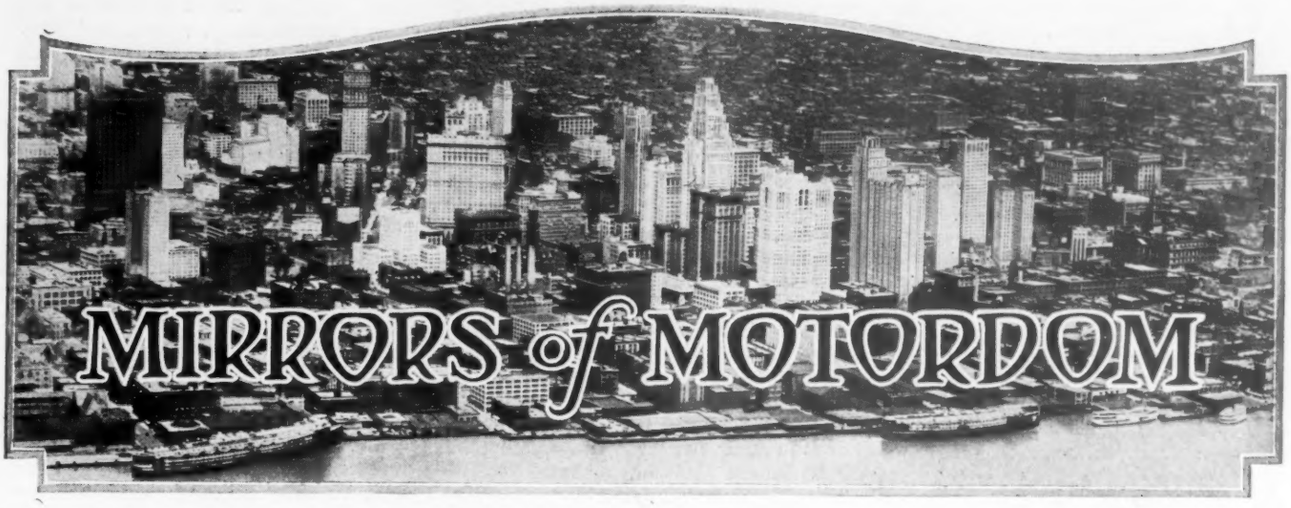
Gross Tons

Commodity	June, 1933	May, 1933	June, 1932
Pig iron	11,230	9,548	14,604
Sponge iron	105	52	.....
Ferromanganese, spiegeleisen	6,911	3,811	2,889
Ferrochrome	.....	.....	18
Ferrosilicon	47	.....	.....
Other ferroalloys	101	.....	.....
Scrap	4,058	4,370	245
Steel ingots, blooms, etc....	242	17	21
Concrete bars	313	371	3,428
Hollow bar, drill steel	90	57	44
Merchant steel bars	1,844	1,099	3,173
Iron slabs	.....	.....	11
Iron bars	46	77	5
Wire rods	1,431	961	457
Boiler and other plate.....	2	27	178
Sheets, skelp, saw plate....	626	417	1,038
Tin plate	6	21	43
Structural shapes	3,329	2,113	2,044
Sheet piling	.....	.....	.....
Rails and fastenings	110	312	144
Cast iron pipe, fittings....	71	87	.....
Welded pipe	253	243	194
Other pipe	176	80	127
Barbed wire	368	445	1,759
Round iron, steel wire	169	137	199
Telegraph, telephone wire	.....	.....	.....
Flat wire, strip steel.....	102	87	56
Wire rope, strand	125	117	197
Other wire	105	108	86
Hoops and bands	1,955	1,131	2,382
Nails, tacks, staples	375	485	998
Bolts, nuts, rivets	16	34	16
Horse and mule shoes	19	25	7
Castings, forgings	143	63	124
Totals	34,368	26,295	34,487

UNITED STATES EXPORTS OF IRON AND STEEL PRODUCTS

Gross Tons

Commodity	June, 1933	May, 1933	June, 1932
Pig iron	94	88	235
Ferromanganese, spiegeleisen	4	1	.....
Iron and steel scrap.....	64,831	89,328	21,837
Ingots, blooms, billets, slabs, sheet bars.....	89	172	19
Bars, iron	43	32	97
Bars, steel	2,066	1,516	1,307
Bars, alloy steel.....	68	197	77
Wire rods	1,312	532	693
Boiler plate	37	36	53
Other plate, not fabricated	435	574	371
Skelp, iron or steel....	2,570	1,102	1,830
Iron sheets, galvanized	128	134	133
Steel sheets, galvanized	3,278	2,958	1,452
Steel sheets, black.....	1,876	2,290	4,772
Iron sheets, black	206	104	246
Strip steel, cold-rolled	698	720	108
Hoop, band, and scroll iron or steel	1,436	986	775
Tin, terne plate.....	5,651	4,189	2,877
Water, oil, gas, other tanks, except lined....	329	7	122
Shapes, not fabricated	819	686	1,624
Shapes, fabricated.....	1,199	758	1,076
Plates, fabricated.....	22	271	4
Metal lath	86	48	350
Frames, sashes, and sheet piling	198	810	1,328
Rails, 50 pounds.....	385	1,252	2,108
Rails, under 50 pounds	139	110	.....
Rail fastenings	157	90	288
Switches, frogs and crossings	53	20	93
Railroad spikes	75	48	15
Railroad bolts, nuts....	19	13	50
Boiler tubes, seamless..	176	226	381
Boiler tubes, welded....	60	25	6
Casing and oil-line pipe, seamless	1,411	3,724	604
Casing and oil-line pipe, welded	428	130	473
Seamless black pipe, other than casing.....	108	79	40
Malleable iron screwed pipe fittings	159	193	143
Cast iron screwed pipe fittings	96	51	33
Cast iron pressure pipe, fittings for	1,000	608	97
Cast iron soil pipe, fittings for	450	219	176
Welded black steel pipe	1,111	868	602
Welded black wrought iron pipe	76	37	87
Welded galvanized steel pipe	1,561	1,747	1,236
Welded galvanized wrought iron pipe....	158	12	90
Riveted iron or steel pipe and fittings.....	1	5	49
Plain iron or steel wire	773	337	337
Galvanized wire	921	552	131
Barbed wire	2,743	2,688	1,338
Woven wire fencing....	79	67	46
Woven wire screen cloth	76	37	51
Wire rope	157	112	69
Other wire manufactures	264	256	198
Wire nails	1,141	668	483
Horseshoe nails	57	36	38
Tacks	23	27	34
Other nails, staples.....	322	257	213
Bolts, machine screws, nuts, rivets, washers	263	264	193
Iron castings	167	97	295
Steel castings	41	48	145
Car wheels, axles.....	285	222	148
Horseshoes	22	2	2
Iron, steel forgings, n. e. s.	149	403	325
Totals	102,581	123,069	52,093



To Go Aerodynamic in 1934

• • •

Auto Output Is Up to 72%

• • •

Ford Rearranges Driveaways

DETROIT

WHILE sales staffs of automobile manufacturers are driving hard to market current models, engineering and research departments are putting final touches on plans for their 1934 series.

The science of aerodynamics has made great strides, and this year as last the chief innovation to the casual buyer will be in the bodies.

Two lines of a large-scale manufacturer who frequently pioneers and several of the smaller producers who usually win major notice only by being radical may go almost the full length in streamlining, but most manufacturers will build conservatively on the start made this year.

In streamlining, as in other phases of design, automotive engineers are three to five years ahead, but public acceptance must be built up by degrees and decisions on changes are contingent more upon this acceptance than engineering availability.

Radiators in 1934 will be narrower, tapering to the top, and some will be extremely pointed. Hoods likewise will be narrower at the front, but will extend almost to the windshield and thus virtually eliminate the cowl.

Rear ends will be beavertailed more radically to eliminate the vacuum, and in more than one line the trunk and spare tire carried at the rear will be countersunk into the body, or the equivalent.

The longer and more pointed hood, a more pronounced rake of windshield pillars, and the longer sweep of the rear will accentuate the low-hung appearance which most designers are seeking. On at least one line the running board will be absent in 1934.

Fender valances are here to stay, but in the new series they will be designed to tie in more closely with aerodynamics. The closer the approach to true streamlining the more these valances will simulate those of Oldsmobile this year.

It may be significant that when Cadillac built a 16-cylinder coupe for W. S. Knudsen, president of Chevrolet, with design and not money the governing factor, neither Cadillac nor Chevrolet fender valances were adopted, but Oldsmobile's.

The "sunshine saloon" body—a closed type with the roof rolling back much like the front of an old-fashioned desk—is popular abroad. It appeals to fresh air fans, provides a handy exit in case of accident, and is especially popular in Holland, where cars sometimes slither into canals. There is an outside chance that some special bodies with this top will be available next year.

WHEN engineers and designers dream of the perfect car they usually visualize mounting the engine at the rear. Some experimental work is being done, but there is nothing to indicate any standard production in the near future.

So far as can be learnel, engines are now mounted in front because the horse always was hitched to the front of the buggy or wagon. Mechanically, there is almost everything in favor of rear mounting.

The driveshaft would be eliminated. Passengers in the rear seat, now in the easiest riding part of a car would be moved forward. Streamlining would be effected more naturally, and a medium size car like Pontiac would afford the roominess of a Cadillac.

A noted engineer points out that at present the chauffeur or driver sits in the easiest riding part of a car while the passengers are mounted on a 1000-pound rear axle. He visualizes a car in the future weighing less than 1000 pounds or 20 pounds per horsepower, acceleration to 60 miles in 8 seconds, fixed windows and fully enclosed wheels. Tires would be 26 x 10 inches, and pressure as low as 2 to 4 pounds.

Most experiments thus far have developed this major disability to rear-mounted engines; A concentration of weight at the rear and a tendency to skid on taking corners rapidly. This objection may be overcome by lighter construction.

One delivery truck shown at the 1933 automobile shows had wheels hung directly on the body, eliminating axles, but little progress has been made in adapting this to passenger cars, though experimental work is being done.

A Colorado manufacturer is using a patented arched front axle, permitting the engine to be moved forward 16 inches and down 4 inches, thus bringing the rear seats well forward of the rear axle.

A car with two wheels forward and one rear is being produced in the East, but at this time does not offer anything for quantity production. The rear wheel steers, the two front wheels carry 75 per cent of the load, and air resistance is eliminated by three-quarters, it is claimed.

Beginning with 1934, cars without a flare at the bottom of their front doors, to provide more foot room on entering and leaving, will be decidedly passe. One manufacturer estimates the cost of dies involved to be fully $150,000.

Some manufacturers have concentrated their efforts on bodies the past two years, with comparatively few changes in chassis. Two large-selling cars are expected to adopt an X-frame or the equivalent next year.

Until the new types of engine mountings came in, both engine and transmission were rigid. A problem has been created by a "free" engine and a rigid transmission. One popular make already has freed its trans-

mission considerably; others will do so this coming year.

JUNE production of motor vehicles in the United States is officially placed at 253,322 units, largest since May, 1931. This represented the industry occupied at 72 per cent of capacity, as the accompanying chart shows. Canadian production fell off rather sharply, especially in passenger cars, due to seasonal factors. Full statistics of production are given on page 62.

At the close of July it is apparent that little deviation from June developed. When the month opened, preliminary schedules indicated some recession, but enlargements as the month wore on practically wiped out the contemplated losses.

As August opens, the Chevrolet schedule is 10,000 to 15,000 below the initial schedule for July, but if no expansion is shown this will be the first month since the bank holiday not to better the expectation. Plymouth continues to hold close to 40,000 units, or capacity, while the Ford vacation shutdown will hurt it. Indications are that the customary midsummer lull will make itself felt in August, but there are numerous variables which may upset this outlook.

Ford has surprised—and heartened—the railroads by proposing to curtail driveaways of new cars radically, for one thing because the handling of new cars by "inexperienced or irresponsible" drivers is harmful.

Where such driveaways seem justified, speed regulators will be installed. Water shipments will be made to Great Lakes points. Most deliveries up to 200 miles will be made by carrier trucks. Over 200 miles, railroads are to be used.

There has been considerable frankness recently in regard to bodies. Plymouth and Essex have been citing the merits of all-steel, welded construction. Chevrolet, using the composite wood and steel bodies of Fisher, has started to stress the alleged weakness of steel without a backing of wood. Now Ford enters the fight, championing the steel body vigorously.

AN ADVANCE in f.o.b. prices of automobiles has been brought considerably nearer by further pressure by Washington for a code from the automobile industry. Supplementing its recent 5 per cent increase in wages, some units of General Motors have gone up 15 per cent. Indications also are that the 37½-hour week generally adopted in th industry is considered too high by Washington and that the final agreement will be on 35 hours or less.

Because of the higher hourly rates, machinery and conveyor lines in some automobile plants which have been idle for several years probably will be restored to activity. The practice of the industry to spread employment was to shut down some equipment and employ more hand labor, but a return to machinery now promises to become necessary.

There are indications that Chrysler may take the lead in advancing prices. This and its higher wage and material costs may lead General Motors to abandon its policy of going through the present model year at unchanged prices. Some Ford dealers are advising their trade that it will be only a few weeks before prices are advanced.

Gen. Hugh S. Johnson, administrator of NRA, conferred with automobile executives in Detroit Friday and returned to Washington that night with the code.

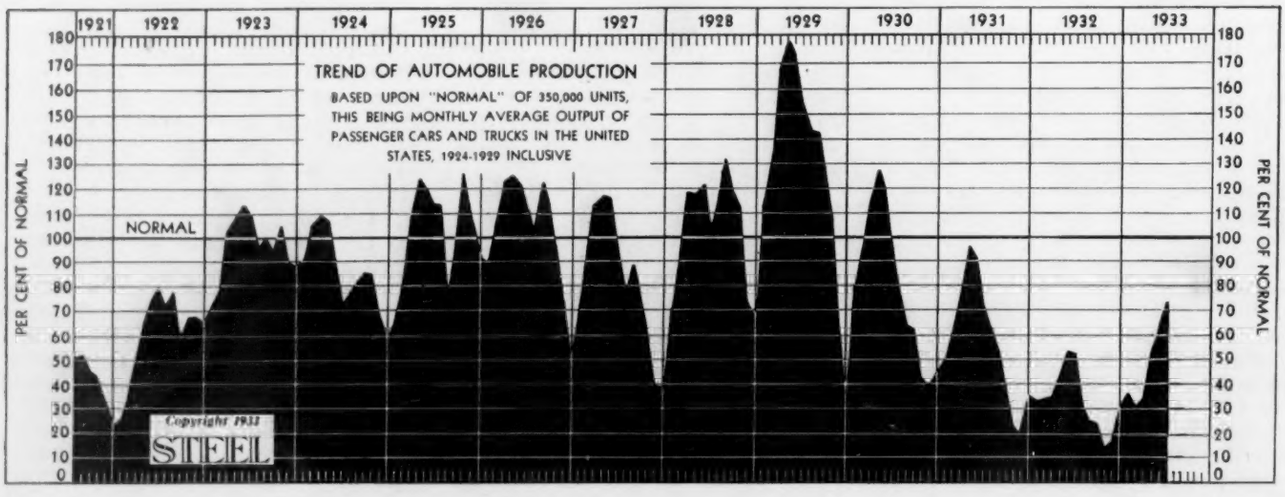
Hupp is now mounting deflectors on the leading edge of front windows to facilitate ventilation. . . . One reason the rubber factories have been rushed the past two months is that they misgaged automobile production, one large interest estimating 1933 as a million car year, or less than half the actual output of the first six months. . . . Standard Ford models are now finished with an enamel in which a synthetic resin (combination of glycerin and pthalic acid) is used. . . . Goodyear is pushing a paint with a rubber base as a substitute for a lead paint base. . . . Cadillac-LaSalle is now using Duco lacquer instead of enamel on fenders, running board moldings, splashers, tire carriers and other parts. . . . Hudson-Essex sales continue above the highest point of 1932. . . . Recently, some automobile manufacturers have been announcing sales and production in percentages instead of units, thus affording more favorable comparisons when and if a seasonal letdown comes. . . . Peerless has adopted Brewing Corp. of America as the name of its subsidiary to make ale in its plant in Cleveland. . . . George Fink, president of National Steel Corp., is on the board of the new Manufacturers National bank, popularly regarded as a Ford bank.

Prize Bridge Gets Plaque

A stainless steel plaque, designating it as the most beautiful monumental bridge built in 1932, was affixed July 28 to the twin spans over the Hackensack and Passaic rivers, constituting part of the viaduct over the New Jersey meadows. The award was made by the American Institute of Steel Construction, New York. The McClintic-Marshall Corp. fabricated and erected the two river spans and part of the approaches. The greater part of the approaches was fabricated and erected by the American Bridge Co. and the Phoenix Bridge Co.

1437 Tons from Soviet Stack

Magnitogorsk blast furnace No. 2 recently produced 1437 tons of pig iron in one day, or 156 per cent of the plan for it, states the economic bulletin of the USSR chamber of commerce.



European Steel Trade Revives; Entente Takes Over Selling

DEFINITE improvement in business conditions in Great Britain and the principal Continental countries has occurred in the past three months. The most satisfactory features in this connection are, that the improvement is to a large extent general and gradual, that it set in before the world conference began in London, and that it has taken place without any of the countries thus favored having resorted to large-scale inflationary measures.

It may be granted that, to some extent, prospects of the coming assembly of nations helped to bring a return of confidence, but it is more likely that better conditions are the natural reaction from a crisis that has passed its peak.

Little can be said regarding the world conference itself and it would not be fair to offer definite comments before conclusions are reached. It opened in an atmosphere of official optimism. Public opinion, however, was divided as to ultimate success and events since it started, particularly in regard to monetary aspects, tend to confirm the skepticism in their attitude.

Steer Clear of Inflation

Continental nations have reason to distrust inflationary measures and some have paid dearly for past experiences. They have learned that the trade impetus which immediately follows inflationary measures can continue only if these measures are maintained and even expanded, and then a state of utter confusion is reached. In internationl trade especially, business is seriously hindered by constant fluctuations of currencies and in many cases serious losses are the result.

There appears a certain willingness to reduce tariff walls all round, but it is contended that this cannot be done while the major world currencies fluctuate. The problem of mutually adjusting currencies and tariffs may not be beyond the scope of human ingenuity, but when one is faced with the new experience of one currency continually depreciating when everyone believes that intrinsically that currency is worth its full weight in gold, one is not prepared to tackle the problem; the manner in which it is presented is not helpful. It is on such lines that a large section of the European business community reasons.

A proposal has been put before the conference to organize and regulate world production of certain primary commodities. This is particularly interesting in the light of what has been achieved by the steel-producing countries of the Continent. For a period of nearly two years, the articles of the Continental steel entente could almost be looked upon as a dead letter, and the existence of the entente was itself in jeopardy.

However, negotiations were being carried on between representatives of the member-countries with a view to completely reorganizing the entente, with international syndicates to control export sales and prices. These negotiations became particularly active by the end of last year and a definite result was achieved in May, and the entente, with the new syndicates, started its career June 1. The countries that are parties to the entente are: Belgium, France, Germany, Luxemburg, and the Saar territory. Some adjustments remain to be made, but the organization can be summarized as follows:

Vincent Delport, London, European representative of STEEL, in the accompanying review of the steel industry in Great Britain and on the Continent, sees much improvement and indications of better things for the future. Control of marketing by the entente is expected to aid, but monetary unsettlement is a deterrent to trade.

EUROPEAN STEEL PRODUCTION

Gross Tons, 000 omitted

First Five Months

	1933	1932	Per cent increase
Germany	2,720	2,400	13.3
France	2,680	2,250	19.1
Great Britain	2,614	2,223	17.2
Belgium	1,220	1,215	0.4
Luxemburg	830	760	9.2
Italy	690	522	32.2
Saar	642	602	6.6
Czechia	320	286	11.9
	11,716	10,258	14.5

Over the whole organization is the directing committee of the steel cartel, which decides matters relating to regulation of production of raw steel and passes judgment on any contentious matters between the various syndicates. The quota of raw steel production allocated to member-countries depends largely upon the trend of export business, particularly as regards those products that are syndicated, namely, semifinished steel, structural steel, merchant bars, plates, medium-gage sheets, and hoops. No quota has been fixed for third quarter at the time of writing.

The six syndicates are directly controlled by an executive committee, which decides questions of principle, such as price policy, the relations between syndicates and intermediary exporting firms, and fixing of export quotas between each member-country for the various syndicated products, and in accordance with the general trend of markets.

Each syndicate is itself controlled by a committee of management, dealing with interior detailed organization. This management committee will be responsible for fixing of minimum prices of products handled by its syndicate, following the general lines laid down by the executive committee. All these committees will be composed of representatives of the various member-countries.

In each of these countries there exists a national organization composed of domestic comptoirs, directly represented in the cartel. These comptoirs fix quotas of the member-firms and allocate orders to them. Direct contact between customer and supplier almost vanishes. Orders received direct by a firm must be registered with the corresponding comptoir, and if that firm is within the limits of its quota it may be allowed to book the order.

Minimum Prices Set

Generally speaking, all orders are centralized in the various syndicates and comptoirs, which allocate them to the member-firms. No orders can be booked by a firm below the minimum price fixed by the comptoir. At present these minima are as follows, on an f.o.b. basis: Billets, £2 7s 0d ($11.07); structural steel, £2 15s 0d ($12.95); merchant bars, £3 ($14.13); ¼-inch plates, £3 18s 6d ($18.49); 3-millimeter sheets, £4 6s 0d ($20.25); and hoops, £3 12s 6d ($17.07). Negotiatcns now are being carried out with a view of fixing c.i.f. prices for various markets, to limit competition through freight rates.

Fixing of relations between producing-firms on the one hand, and the comptoirs on the other, with merchant exporting firms, proved a difficult problem. A certain number of firms have been approved, which must put up a guarantee of £1000. They are allowed a commission ranging from 1s to 2s 6d (24 to 60 cents) per ton, according to products and markets, and they must natural-

ly undertake to respect prices fixed by the comptoirs.

The question of penalties is not completely settled, but there will be penalties for exceeding the quota of production, for taking orders in excess of quotas, and heavy penalties for selling under syndicate prices.

Many steel firms which have their own export selling organizations, with offices in foreign markets, are forming subsidiary companies in the principal centers. These companies will act as accredited intermediaries under regulations of the cartel.

It is the first time that such an elaborate international organization has actually been set up in the steel industry to control and regulate production, sales and prices. It is complicated and still in its experimental stage, but it is believed that difficulties will be gradually smoothed out and that eventually it will fulfill its object of removing cut-throat competition and allowing steel producers to sell at an economic price.

Central European countries have not yet joined the new cartel. Great Britain remains outside and independent, but it is confidently expected that ultimately the latter country will come to some arrangement with the cartel, particularly as regards export prices and protection of markets.

In connection with the cartel organization there are a number of private agreements between member-countries concerning exchange of steel commodities between their respective domestic territories, more especially as regards tonnage.

British Imports Off Sharply

As previously stated, the trend of business during the past three months has been satisfactory. Continental steel export prices, stimulated by the impending formation of the cartel, have risen, with the result that Continental competition in the British market has decreased.

Imports of foreign iron and steel in Great Britain during the first five months were only 400,393 tons, against 841,476 tons in the corresponding period of 1932, and 1,030,443 tons for 1931. At the same time there was a reduction of British iron and steel exports from 805,278 tons in the period January to May, 1932, to 750,548 tons for this year, a decrease of only 6.8 per cent.

The table on Page 17 shows the growth of steel output in the principal producing countries of Europe during the first five months of 1933. It shows that for a production of 11,716,000 tons the increase in comparison with 1932 was 14.5 per cent. The May figures in particular showed a substantial increase over the monthly average, and over the May tonnage of last year. The improvement affects practically all the countries of Europe and is not limited to the steel industry, notwithstanding many political disturbances.

Died:

DENNIS CROWLEY JR., 57, Pittsburgh district sales manager for Carnegie Steel Co., Pittsburgh, at his residence, Schenley apartments, Pittsburgh, July 27. Mr. Crowley was born in Cork, Ireland, came to Pittsburgh early in life, and after identification with the Southern Pacific railroad in Pittsburgh for seven years went with the Carnegie company in 1901 as a rate clerk in the traffic department, being later transferred to the sales department. Later he was made New Orleans sales manager, where he resided for a number of years, but in 1931 was transferred to the position he held at the time of his death in Pittsburgh. He was unmarried, and a member of the American Iron and Steel institute and several Pittsburgh clubs as well as numerous social clubs in the South.

□ □ □

Robert R. Rust, 54, chemical and mechanical engineer, in New York, July 23. Following studies at the Armour institute, Chicago, he became affiliated in 1903 with the New Jersey Zinc Co. as chemical and mechanical engineer. In 1910 he went with the Central Foundry Co. and in eight years he became its president. While affiliated with these companies he became acquainted with August Heckscher, financier and philanthropist, and a director of both companies. Mr. Rust became interested in Mr. Heckscher's philanthropies and in 1921 gave up his commercial work to become head of the Heckscher Foundation for Children, a post he retained until 1931.

□ □ □

Alexander Churchward, 61, inventor and for the last 12 years technical director of the Wilson Welding & Metal Co., North Bergen, N. J., at South Orange, N. J. Born in Ceylon, India, of British parents, he obtained his education in England and came to the United States when he was 18, entering the employ of the General Electric Co. and later becoming a consulting engineer. He subsequently worked for Henry Ford and Thomas A. Edison. He obtained more than 200 patents in electrical and automotive fields, and during his association with the Wilson company became an authority on electric welding.

□ □ □

Charles Pfeiffer, 75, pioneer Milwaukee industrialist, July 21, at Beverly Hills, Calif. He was born in Watertown, N. Y., and went to Milwaukee as a boy, learning the machinist trade. In 1890 he organized the Pfeiffer & Smith Co., one of the largest machinery manufacturing concerns in the northwest, and in 1898, with the late George H. Smith, formed the George H. Smith Steel Casting Co. He retired in 1916.

□ □ □

A. B. Brown, 38, manager of the metal goods division, Risdon Mfg. Co., Waterbury, Conn., at Homer, N. Y.

□ □ □

John D. Dwight, former manager, Belle City Malleable Iron Co., Racine, Wis., and former manager, malleable division, General Motors Corp., July 23, at Tawas Beach, Mich. He went to Racine in 1912 from Chicago to become an executive of Mitchell Wagon Co., Ajax Rubber Co. and other industries. Later he went to Saginaw, Mich. He retired several years ago and made his home in Washington.

□ □ □

Frank W. Peek Jr., 49, chief engineer of the Pittsfield, Mass., works of the General Electric Co., July 26, while on a vacation trip in Canada. A graduate of Leland Stanford university in 1905, he received his master's degree in electrical engineering at Union college in 1911. He had been associated with the General Electric Co. since 1905.

Indiana Harbor Works Goes 3 Years Without Accident

Three years without a loss-of-time accident is the unusual record of the mechanical department of the Indiana Harbor works, at East Chicago, Ind., of the Youngstown Sheet & Tube Co. W. D. Cleavenger is superintendent of the department, where 312 men are employed. This means that 2,276,249 hours were worked without a loss-of-time accident.

In a letter of congratulation to the personnel of the department, Frank Purnell, president, said that such a record is a tribute of the employes toward safety and justifies the company's efforts to bring about the highest possible degree of safety in working conditions of the plants.

Steel Blade on Post Plane

A hollow steel propeller blade made by Pittsburgh Screw & Bolt Co., Pittsburgh, was used by Wiley Post in his recent record world flight. The company rushed a repair blade to Alaska when Mr. Post damaged his plane in making a landing.

Operates Shelby Iron Mines

Shelby Iron Co., Columbiana, Ala., has leased its iron mines to Shook & Fletcher, Birmingham, Ala., who are operating it.

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Industrial Men in the Day's News

A. J. Johnston, President, Hickman, Williams & Co.

ONLY 20 years has it taken him to traverse the road from salesman to president.

IN his new post he remains in Chicago. A native of Wisconsin, he is also a graduate of its university.

DESPITE the press of office duties he has retained interest in three outdoor sports—golfing, fishing and hunting.

CLIMAXING 20 years' association with Hickman, Williams & Co., distributor of pig iron, coke, alloys, etc., A. J. Johnston recently was elected president of the company, succeeding the late T. C. Ward of Pittsburgh. Since joining the organization as a salesman in 1913, Mr. Johnston has been located in Chicago, where he will continue to maintain his headquarters.

A native of Wisconsin, Mr. Johnston was born in Oconto, June 19, 1890, and received his college education at the University of Wisconsin, where he studied chemical engineering with special training in metallurgy. Following his graduation in 1913 he became identified with Hickman, Williams & Co. at Chicago as a metallurgical salesman. Subsequent promotions brought him to the position of resident manager at Chicago in 1919, and in 1929 he was made vice president in charge of the Chicago office. Since 1930 he had been assistant to the president.

Mr. Johnston derives his recreation from outdoor sports, being especially fond of fishing and hunting. Above the average as a golfer, he is a member of the Kildeer Country club near Chicago and also is a member of the Illinois Athletic club, Chicago. He resides in Evanston, Ill.

W. C. REILLY, vice president, Youngstown Sheet & Tube Co., Youngstown, O., is retiring from the operating department of the company to become associated with the office of Frank Purnell, president, in charge of development and general research. Mr. Reilly was associated with James A. Campbell, former president, when the company was organized 33 years ago and had charge of the company's first plant construction and operation.

W. B. Gillies, assistant vice president the past four years, has been appointed vice president in charge of operations to succeed Mr. Reilly. A graduate of Cornell university, Mr. Gillies was associated with the Steel & Tube Co. of America, Chicago, and when that company was purchased by the Sheet & Tube company in 1923, Mr. Gillies became affiliated with the latter company.

Joseph B. Sugden has been promoted from cashier to assistant treasurer.

Arthur Purnell, sales manager in the Chicago district, is now also assistant treasurer.

John H. Hall, formerly tax accountant, is now general auditor.

John H. Steeves has been made works auditor.

□ □ □

The United States Steel Corp. announces the appointment of additional vice presidents, as follows:

Ralph H. Watson, vice president in charge of operations of the manufacturing interests of the corporation. Mr. Watson is a graduate of the Lawrence Scientific School of Harvard university and has been associated with the Carnegie Steel Co. since 1902, starting as a metallurgist's assistant at the Homestead steelworks and advancing by successive stages to the position of general superintendent of that plant in 1928. Since Sept. 1, 1930, he has also occupied the position of vice president in charge of operations of the Carnegie Steel Co.

R. E. Zimmerman, vice president in charge of research and technology. Mr. Zimmerman since April, 1932, has, as assistant to the president of the Steel corporation, been in charge of the above matters, and is now transferred to a vice presidency. Prior to 1932, Mr. Zimmerman for many years was associated with the American Sheet & Tin Plate Co. at Pittsburgh, starting as a research associate, and progressing to the position of director of the research laboratory, and later assistant to the vice president of that company. Mr. Zimmerman is a graduate of Franklin and Marshall college and of the Massachusetts Institute of Technology.

□ □ □

Thomas R. Mullen, formerly vice president in charge of sales of the

(*Please turn to Page* 54)

EDITORIAL

Steel Industry Awaits NRA Decision on Its Code

TODAY the iron and steel industry formally submits its offer of co-operation with the government under the national industrial recovery act. Its spokesmen, appearing in a public hearing at Washington, will ask the government to accept the code of fair competition which it filed with N.R.A. on July 15.

The occasion is one of extreme importance, not only to the producing branch of the industry but also to the scores of groups of fabricators, manufacturers and distributors whose interests are closely allied with those of steelmakers. Many of these groups have prepared or are preparing codes, but have not filed them. They are looking to the fate of the steel code for guidance as to how they shall proceed. In this respect, the hearings on the steel code assume the character of a test case.

The event projects the steel industry into the limelight of public interest and scrutiny more conspicuously than at any time since the hearings on the "Pittsburgh plus" controversy. In fact, in a third of a century, the industry has been in the public eye only twice under circumstances comparable in importance with its present appearance. These were the hearings in connection with the government's dissolution suit against the United States Steel Corp. and the previously mentioned basing point case.

First Major Situation in which Late E. H. Gary Is Not at Head of Steel Spokesmen

On these and all other occasions since 1901 when the steel industry went before the government or the public, its case was presented by the late Judge Elbert H. Gary. He was the dominant figure in the dissolution suit, the spokesman for the entire industry throughout the war period, the champion of steel during the attempted strike in 1919, and the leading factor in numerous lesser crises in the first three decades of this century. The hearing on the steel code is the first major situation the industry has faced without the guidance and counsel of this distinguished leader.

In view of this fact, it is possible that the present emergency will bring forth new leadership. The industry is off to a good start in that it has produced a remarkably good code of fair competition. However, admirable as it may appear to be in the eyes of the steel industry, it is certain to be attacked vigorously. The opportunity for leadership lies in the stage managership of steel's spokesmen in the hearings and in the decisions to be made by the industry in the event its code, in whole or in part, is rejected as unsatisfactory.

Hearings on the steel code probably will be lively. If the experience of the shipbuilders and oil producers in their hearings last week is prophetic, representatives of the steel industry will be subjected to indignities such as they have never confronted before. The executive of an oil company—one who has won an enviable record for fair dealing and progressive action—declared that in 30 years of meeting unusual situations of all kinds, he had never been "razzed" so unmercifully as on the stand in Washington. Among some of the shipbuilders there is a strong feeling that their industry was ill-treated, that its spokesmen were discriminated against to the advantage of representatives of organized labor and that the government openly used the threat of postponing the navy shipbuilding program or of shifting the work to navy yards as a club to force reluctant acceptance of a code which was virtually dictated by the government.

Industry, Trying To Co-operate, Must Balance Ability To Do So with Its Obligations

Perhaps the emergency is such that some of these rough and tumble tactics are necessary in order to get prompt action. Possibly the recovery administration feels that it is inevitable that toes be stepped upon in the rush to put the program into effect at the earliest moment. Certainly no one expects a code hearing to be a pink tea party.

On the other hand, each industry has certain rights, and has obligations to its employes, stockholders and to the public. Each industry should go along with the recovery program as far as it can without impairing its ability to meet these obligations.

Steel's representatives will follow this policy. They go to Washington prepared to co-operate liberally. Every indication points to a demand by the government for important revisions. How far the industry can go in meeting the administration's demands is a question requiring the best judgment of steel's representatives. Here, in the solving of this problem, will be the test which, we trust, will bring into being the new leadership of the industry.

THE INDUSTRIAL DIAL

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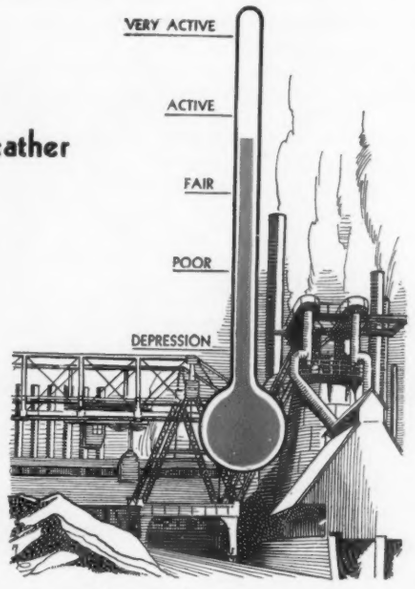
BUSINESS is entering a critical phase of the recovery period. In some respects the situation is more delicate than it was at the time of the bank holidays. Then the proper course of action was quite clearly indicated; today there is increasing doubt as to whether or not the theory of recovery, upon which the government's current activities are based, is sound. Moreover, it is clear that in conducting the great experiment, it will not be easy to retrace our footsteps after we have discovered that we have made a mistake.

Right now the full force of the government is directed toward an attempt to speed up purchasing power in hope that it may overtake runaway production and prices. It is assumed that purchasing power can be expanded by increasing employment by shortening hours and by raising wages. These are the primary objectives of the national recovery act.

Meanwhile, production and prices have mounted spectacularly. They started upward in April—probably as a resumption of an improvement begun in August, 1932 but interrupted by the bank difficulties. They gained momentum from our departure from the gold standard, which precipitated a flight from the dollar into goods and securities. They were further elevated by speculation induced by the fear of inflation and by intimation that the dollar will be devaluated.



Thus we have two race horses, one leading the other by a large margin. The leading horse is Prices and Production, whose jockey is urging him on to runaway speed with the whip of inflation. Many yards behind is the horse Purchasing Power, whose jockey is energetically applying the whip of N.R.A.

President Roosevelt is betting the success of his recovery program upon the ability of Purchasing Power to overtake Prices and Production.

Some authorities are beginning to wonder if it is wise to continue to apply the whip of inflation so drastically. Would it not be better, they argue, to permit Prices and Production to slow up a bit, so that Purchasing Power can catch up and overtake it without straining itself to the point of collapse?

Current developments lend considerable support to this argument. Costs are being increased much more drastically than had been anticipated. In the code hearings held thus far, it is apparent that the government leans toward a 30-hour week more than to a 40-hour week. Compromises in the early thirties seem to be the order of the day.

Few persons have given much thought to what this means in terms of prices of consumers' goods. Authorities intimate with the production and marketing of oil say that N.R.A. means an increase of 2½ to 3 cents in the price the consumer will pay for a gallon of gasoline. Will the public absorb this extra cost, or will it cut down on its consumption of gasoline?

Despite the doubt arising from questions of this kind, industry is going along with the recovery program to the best of its ability. Employers are advancing wages retroactively, although in many cases they still are operating in red ink. The larger companies undoubtedly can afford to underwrite the experiment in this fashion, but the smaller companies will find it difficult to do so.

Before we get through, adequate banking facilities may be found to be an essential adjunct to N.R.A.

Where Business Stands

Monthly Average, 1932 — 100

	June, 1933	May, 1933	June, 1932
Steel Ingot Output	238.0	176.6	83.6
Pig Iron Output	177.4	123.4	88.0
Freight Movement	104.3	97.9	98.7
Building Construction	123.1	117.5	92.3
Automobile Output	218.5	188.6	159.4
Wholesale Prices	117.3	112.9	94.1

Thumb Nail Sketches Of Business

Another leap of 12 points in the federal reserve board's index of industrial production for June, brings the figure up to 89. In three consecutive months the index has gained 29 points. Nothing remotely approaching this in speed of recovery had been recorded previously. The index gained 7 points in April, 10 in May and 12 in June. The uncertainties developing in the last half of July may cause a sharp reduction in the gain for July. The reserve board estimate for July is 92, a gain of only 3 points.

Employment Gains 8 Points in Three Months

Factory employment for June stood at 64.8, compared with 60.6 in May and 57.7 in April. This is a three-month gain of 8.2 points against the increase of 29 points in industrial production. Here again is the statistical basis for the administration's lament that wages are trailing so far behind industrial activity.

Majority of Companies Cut Losses

In spite of the remarkable improvement in industrial production, second quarter financial reports show relatively few companies which have graduated from red to black ink in that period. The majority showed encouraging reductions in their operating deficits. Losses for the United States Steel Corp. were halved. In a few rare instances deficits were increased slightly over those of the first quarter. Inland Steel was one of the few to appear in black for the June quarter, after having been in red in the March quarter.

Railroad Earnings Improve; Buying Lags

The railroad earnings reports are much brighter. The improvement had been expected because of the consistent way in which freight traffic has been expanding. Employment on railroads has increased in recent weeks through the operation of more trains and particularly because of the need of reconditioning cars and locomotives. Purchases for repairs have increased somewhat and in the aggregate railroad buying may be heavier than is realized. However, purchases of materials in large amounts, as were necessitated in the past when traffic was at its present level, have not yet appeared. The combination of better earnings, greater traffic and an incipient shortage for some classes of cars ought to increase railroad purchases shortly.

Gains in Power Output Are Checked

Electric power output, which has gained steadily since April, is showing signs of easing its pace of improvement. The total for the week ending July 22 was 1,654,424,000 kilowatt-hours, against 1,648,339,000 in the previous week. The total for the week ending July 22 is the second highest of the year, and represents a gain of 15.4 per cent over the figure for the corresponding week of 1932. The total for the week ending July 15, this year, was 16.4 per cent above the figure for the same week last year.

Wheat Crop Smaller; Cotton Acreage Up

The department of agriculture estimates the wheat crop at 350,000,000 bushels below the average of 1926-1930. The decrease is attributed to adverse weather. Cotton acreage on July 1 was estimated at 41,000,000 acres, a gain of 4,000,000 over 1932. The agriculture adjustment administration's program is expected to cut the acreage by 10,000,000.

Demand Deposits Shrink After Bank Act

The federal reserve board's report states that during the four weeks following the enactment on June 16 of the banking act of 1933, which prohibits the payment of interest on demand deposits, net demand deposits of weekly reporting member banks in 90 cities declined by $500,000,000, reflecting the withdrawal of $300,000,000 in bankers' balances from banks in New York and elsewhere, and the transfer of funds from demand to time accounts. Time deposits increased by $260,000,000.

The Barometer of Business

Industrial Indicators

	June, 1933	May, 1933	June, 1932
Pig iron output (Daily average, tons)	42,050	28,784	20,867
Machine Tool Index	27.9	19.1	39.1
Unfilled orders (tons)	2,106,671	1,929,815	2,034,768
Ingot output (Daily average, tons)	99,904	74,148	35,106
Dodge Bldg. awards in 37 states (sq. ft.)	16,199,500	15,277,000	12,295,700
Automobile output	260,645	227,567	190,204
Coal output, tons	25,320,000	22,488,000	17,749,000
Business failures, number	1,648	1,909	2,688
Business failures, liabilities	$35,344,909	$47,971,573	$76,931,452
Cement production, Bbls.		6,266,000	7,921,000
Cotton consumption, bales	696,000	621,000	320,783
Car loadings (weekly av.)	566,345	531,960	535,750

Financial Indicators

	June, 1933	May, 1933	June, 1932
25 Industrial stocks	$134.53	$118.30	$68.82
25 Rail stocks	$36.01	$31.01	$12.77
40 Bonds	$73.45	$69.74	$57.52
Bank clearings (000 omitted)	$19,710,228	$16,064,116	$21,653,755
Commercial paper rate N. Y. (per cent)	1¾–2	2	3
*Commercial loans (000 omitted)	$4,704,000	$4,772,000	$11,263,000
Federal Reserve ratio, per cent	68.8	68.0	57.2
**Railroad earnings	$40,693,072	$19,041,789	$11,665,702
Stock sales, N. Y. stock exchange	125,627,124	104,229,094	22,997,862
Bond sales, par value	$377,745,900	$373,966,500	$225,775,800

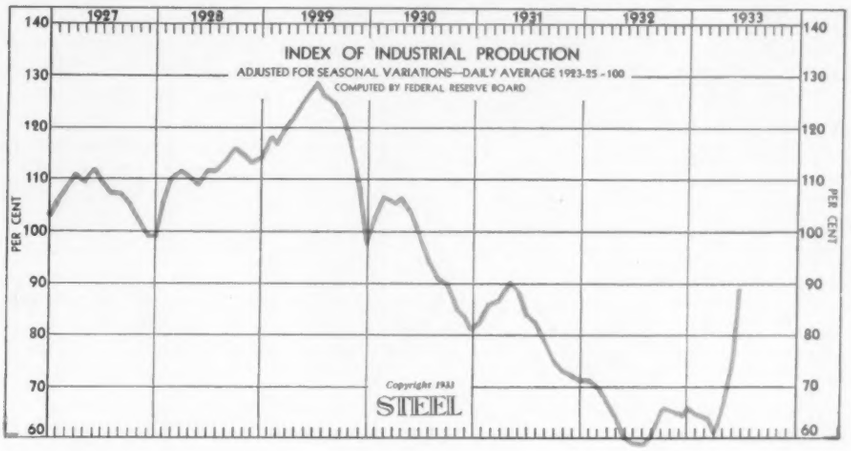
*Leading member banks Federal Reserve System.
**May, April and May, respectively.

Foreign Trade

	June, 1933	May, 1933	June, 1932
Exports		$114,000,000	$114,259,000
Imports		$107,000,000	$111,405,000
Gold exports		$22,024,000	$226,117,000
Gold imports		$1,785,000	$20,070,000

Commodity Prices

	June, 1933	May, 1933	June, 1932	Monthly Av. 1913
STEEL'S composite average of 14 iron and steel prices	$28.73	$28.45	$29.54	$26.32
Bradstreet's index	$8.33	$8.02	$6.68	$9.21
Wheat, cash (bushel)	$1.04	99c	66c	92c
Corn, cash (bushel)	63c	58c	45c	51c
Petroleum, crude (Bbl.)		25c	90c	$2.50



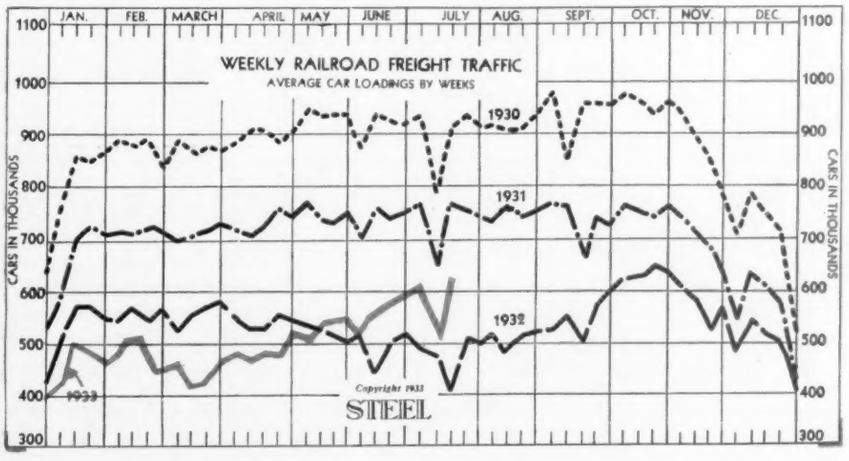
June, 1933	89
May, 1933	77
June, 1932	59

Industrial Production Index Rises 12 Points in June

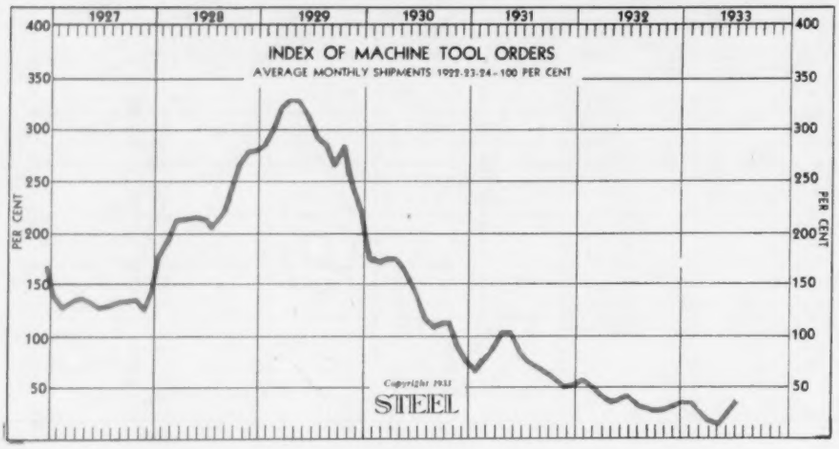
Industrial production in the United States during June rose to the highest level since the spring peak of 1931, according to statistics issued by the Federal Reserve bcard. The index for June stood at 89, a 12 point rise over the 77 reported in May and compares with 59 in June, 1932. The peak for 1932 was 72 registered in January. In the manufacturing group, probably the most outstanding was the expansion in steelmaking activity which registered a gain of 23 points in June for a total of 72. Sharp increases in production activity were also reported for other industries, including textiles, food products, lumber, automobiles, leather and cement.

Freight Car Loadings Rebound Following Holiday

Loading of revenue freight for the week ending July 15 totaled 648,206 cars, the highest for any week so far this year, according to the report of the American Railway association. This was an increase of 108,983 cars above the preceding week this year, when loadings were reduced owing to the observance of Independence day, and was an increase of 144,445 cars above the corresponding week in 1932. Loading of all commodities for the week of July 15 showed increases over the preceding week this year. All districts except the central western reported increases in the total loading of all commodities compared with the same week in 1932.



	1933	1932
July 15	648,206	503,761
July 8	539,223	415,928
July 1	634,074	480,281



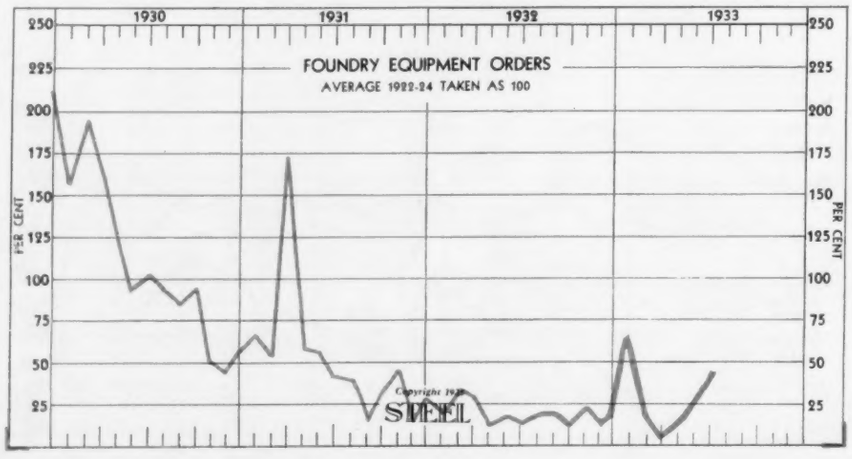
	Per cent
June, 1933	27.9
May, 1933	19.1
June, 1932	39.1

Index of Machine Tool Orders Up Sharply in June

With new orders rising to the highest level in 14 months and with the demand for machine tools steadily expanding the industry is now confidently pointing to a long term recovery. According to the National Machine Tool Builders association, the three-month moving average for June was 27.9 compared with 19.1 in May and 39.1 in June, 1932. Shipments are showing a steady increase and returned to a level of last fall, increasing 8 points in May the index stood at 30.9 compared with 22.3 for the corresponding month last year. While shipments were heavier in June not all the new business developed last month was shipped out. Consequently, the index of unfilled orders also was up 8 points to 40.3.

Foundry Equipment Orders Highest Since November, 1931

Foundry equipment demand registered a sharp increase in June, according to the monthly report of the Foundry Equipment Manufacturers' association. The index for gross orders during the month was 45.5, which is the highest level reached since November, 1931, with the single exception of the brief spurt in January, 1933 when the index rose to 68.4. Domestic consumption for foundry equipment has probably been the heaviest in more than a year inasmuch as the sharp upturn of January was the result of a large order for foreign use. The June, 1933, shipment index increased to 37.4 from 24.5 in the preceding month. The unfilled order index on June 30 was 24.8 against 16.8 a month previously.



June, 1933	45.5
May, 1933	25.6
June, 1932	14.2

SPEED-TORQUE CURVES—HOW THEY PICTURE CRANE PERFORMANCE

Part I

BY A. A. MERRILL
General Electric Co.

Pouring ingots from crane equipped with seven motors aggregating 412 horsepower. Two of these cranes serve the open-hearth furnaces of Wheeling Steel Corp., Portsmouth works, Portsmouth, O.

IN THE design, installation and maintenance of crane and hoist control, the four-quadrant speed-torque chart is a most helpful tool. The purpose of this article is an explanation of this simple, but useful diagram. Subsequent articles will discuss effects of changes in control on the shape of the curves.

The co-ordinate field of this chart is illustrated by Fig. 1. Speed is plotted vertically, in per cent of full-load motor speed with direct-current motors, or of synchronous speed with alternating-current motors. One hundred per cent speed is normally the motor nameplate speed rating. Positive speed is defined as speed in the forward or hoisting direction, negative as speed in the reverse or lowering direction. Standstill is represented by the horizontal zero speed line in the center of the chart.

If the motor is operating at a point in the upper half of the chart, therefore, it is rotating in the forward or hoisting direction. If on the zero speed line, it is standing still, while if it is in the lower half of the chart, it is rotating in the reverse or lowering direction.

Torque is plotted horizontally, in per cent of full-load motor torque. One hundred per cent torque is exerted by the motor when it is delivering rated horsepower at full speed. It may be calculated by the following formula: 100 per cent torque, in pounds at 1-foot radius = (5252) $\times$ (rated horsepower) $\div$ (full-load motor speed in revolutions per minute). Positive torque is defined as motor torque in the forward or hoisting direction, negative as torque in the reverse or lowering direction. If the motor is operating at a point in the right-hand half of the chart, therefore, it is exerting a torque tending to hoist the load, or to move a crane bridge or trolley in the forward direction. If it is operating at a point on the left-hand half of the chart, it is exerting a torque in the reverse direction, tending to lower a crane load, or to drive a bridge or trolley in reverse.

The four quadrants then represent four dis-

THE possibilities of crane and hoist control adjustments through use of speed-torque curves are set forth in the accompanying article and two more to follow. The information is intended to prove helpful to engineers concerned with crane installation and operation. Part I is a general explanation of how these curves are constructed and their meaning, including how a complete hoisting and lowering cycle may be followed by means of the curve sheet; Parts II and III will describe adjustments of series motor control with aid of the curves. Specifically, Part II will deal with hoist, trolley and bridge connections and Part III with crane lowering connections. The author is in the industrial engineering department, General Electric Co., Schenectady, N. Y.

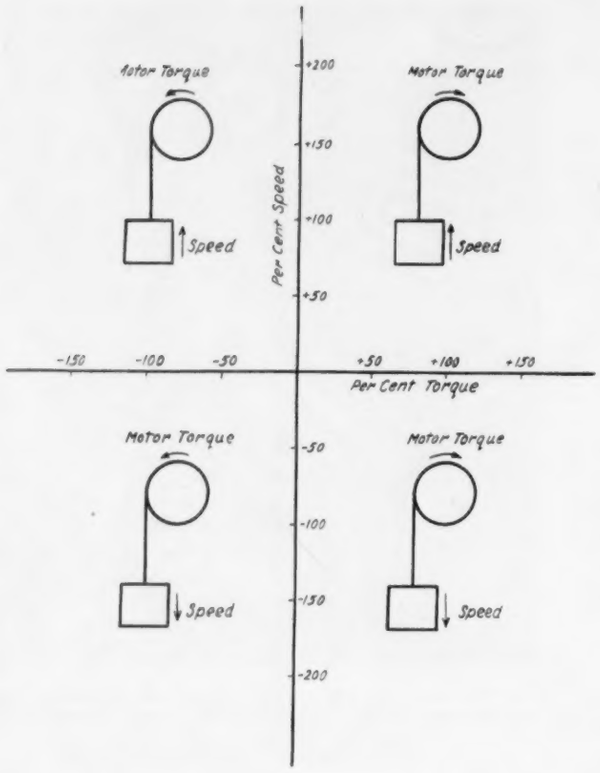


FIG. 1—The coordinate field of a speed-torque chart. Speed is plotted vertically and torque horizontally. In the upper half, the motor rotates in the forward or hoisting direction; in the lower half, it rotates in the reverse or lowering direction. In the right-hand half, torque tends to hoist the load or move the bridge forward; in the left-hand half, it tends to lower the load or move the bridge in reverse

tinct conditions of operation. In the upper right-hand quadrant, the motor is rotating in the forward direction, and is exerting a torque in the same direction. If a hoist is operating in this quadrant, the load is being raised by the motor torque, against the retarding effect of gravity and friction. It is called, therefore, the "Power Hoisting Quadrant." In the case of a crane bridge or trolley, the motor is driving the load in a forward direction, against the resistance of friction.

In the upper left-hand quadrant, the load is still rising, if a hoist is considered, or traveling in the forward direction, in the case of a crane bridge or trolley. The motor torque, however, is in the reverse direction, and is attempting to retard the motor armature. This quadrant is not very useful in the case of a hoist, for retardation usually is accomplished by gravity with assistance of the motor brake. For a crane bridge or trolley, however, plugging deceleration is accomplished in this quadrant.

Two Torque Directions

The lower left-hand quadrant is called the "Power Lowering Quadrant," for in the case of a hoist, the load is being driven downward by the motor torque with assistance of gravity. Considering a bridge or trolley, the load is being driven in the reverse direction by a reverse motor torque.

The lower right-hand quadrant is the most interesting of all. Here we find regenerative braking, dynamic braking or plugging of a lowering crane load, for the motor torque is in the hoisting direction. We also can study plugging of a crane bridge or trolley in this quadrant, for although the bridge or trolley is traveling in the reverse direction, motor torque is in the forward direction, and is assisting friction in retarding the load.

Fig. 2 illustrates speed-torque curves obtained from a standard reversing-plugging crane control, with a wound-rotor induction motor. Each curve represents the torque delivered by the motor at any given speed, when the drum switch is placed on one of its positions. The curves are marked with their corresponding drum switch positions. For example, *F*1, *F*2, *R*1, *R*2, correspond to the first and second drum switch positions forward, and the first and second positions reverse, respectively.

To explain this chart, let us consider a typical cycle. Let us start in the forward direction, accelerate to full speed, decelerate by plugging to standstill, start in the reverse direction, accelerate, and finally decelerate again by plugging.

A convenient rule to remember is that all transfers from one curve to another are made by horizontal lines, or, in other words, at constant speed. The reason for this is that the motor does not have time to change its speed in the short period required to notch the drum switch from one position to the next. Oscillograph tests show this rule to be not strictly true, for reactance of the windings tends to make the line slightly curved. For all practical purposes, however, a straight line may be assumed.

To start the cycle, let us notch the drum switch handle to the first position in the forward direction. Power is applied to the motor, with all rotor resistance connected in the circuit. The motor torque immediately rises from zero at point *A* to 50 per cent torque at point *B*. Let us assume that 100 per cent torque is required to drive the trolley. This figure is assumed merely for convenience in explanation; in actual practice it will be much less, perhaps between 30 and 50 per cent. The actual figure should be determined for each case.

At any rate, in our present example, the 50 per cent torque produced on the first position is insufficient to start the trolley, merely taking up slack in the gearing. Let us then notch the drum switch handle to the second point, *F*2. This shorts out a section of the rotor resistor, and the motor exerts 120 per cent torque at point *C*. This is more than enough to drive the trolley, so that it starts in the forward direction. The difference between the 100 per cent torque required to overcome friction and the 120 per cent supplied by the motor is available for acceleration. As soon as the trolley has reached 20 per cent speed, at point *D*, motor torque is balanced by the friction torque of 100 per cent, and there is no tendency to increase speed.

Boost Torque to Accelerate

If the drum switch handle is now notched to the third position, *F*3, motor torque is increased from 100 per cent at point *D* to 200 per cent at point *E*, and accelerates the trolley to 67 per cent speed at point *F*, when motor torque is again balanced by the friction torque of the trolley. Similarly, the drum switch handle is notched to the fourth position and finally to the full speed position, the motor torque and speed following the arrows through points *G*, *H*, *I*, to *J*. The trolley now is travelling at 96 per cent of synchronous speed and the motor torque is consumed by the trolley friction 100 per cent. It will be noted that friction torque is assumed to be constant regardless of speed, which is not strictly true, however, the error is small.

The trolley now is approaching its destination, and we wish to decelerate. There are three alternative methods. First, we can notch the drum switch handle to the "off" position, and set the motor brake. This causes unnecessary wear on the brake, and consequently increases maintenance expense. The rapid stop also produces undesirable swaying of the load. Second, we can notch the drum switch handle part way back, inserting resistance in the rotor circuit and decreasing the motor torque. Friction of the trolley then will gradually reduce its speed. This method of deceleration

would be very slow, for the motor still is exerting torque in the forward direction. The third and most practical method is that of plugging the motor. This method will be followed in our cycle.

Let us then notch the drum switch handle from the last position forward, *F*5, to the first position in the reverse direction, *R*1. The power to the motor then is reversed, and the motor exerts a reverse, or plugging torque of 100 per cent, at point *K*. This torque decelerates the trolley rapidly. When it has slowed down to 30 per cent at point *L*, we decide that deceleration could be more rapid and notch the drum switch handle to the second point reverse, *R*2. The braking torque then is increased 145 per cent at point *M*. This torque decelerates the trolley rapidly to standstill at point *N*, when the drum switch is notched to the off position, setting the motor brake. This brings the first half of the cycle to an end at the starting point, *A*. It should be noted that if the drum switch had been left on the second position reverse, *R*2 after the trolley had come to standstill, point *N*, the reverse motor torque would start to accelerate the trolley in the reverse direction, traveling along the curve toward point *P*.

To complete the cycle, driving the trolley in the reverse direction, a similar process is followed. It may be traced on the chart by the arrows, passing through points *A*, *O*, *N*, *P*, *Q*, *R*, *S*, *T*, *U*, *V*, *W*, *X*, *Y*, *Z*, *C*, *B*, and back to *A*.

By use of this chart, effect on the motor torque of premature advancing of the drum switch handle may be observed. For example, assume that at point *D* in the first half of the cycle, the drum switch handle is notched directly to the last position, *F*5, from the second position, *F*2. Instead of the 200 per cent torque obtainable at point *E* on the third drum switch position, *F*3, the motor torque would be considerably less, being approximately 170 per cent at point *Z*. Not only would the torque be lower, but high current would result, causing poor commutation.

The route of the arrows may be varied in an infinite variety of ways. For example, the motor might be reversed or plugged before reaching full speed, from any one of the drum switch positions.

Applied to Series Motor

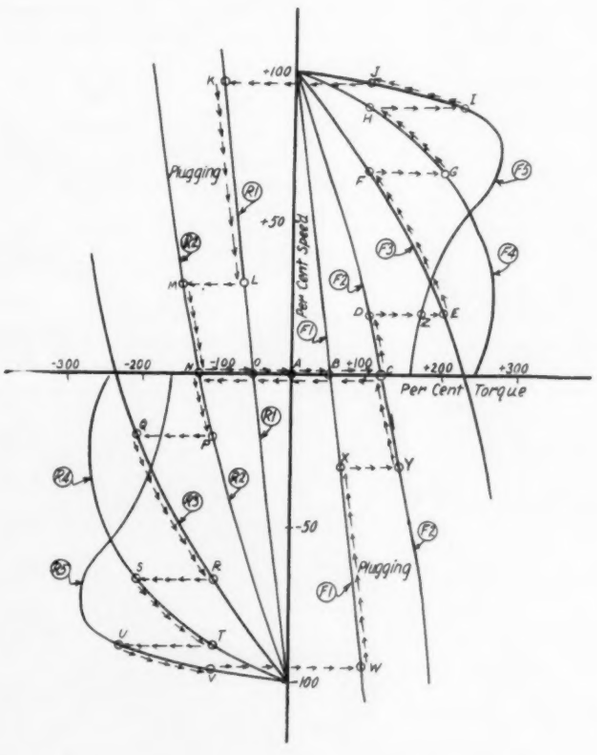
Fig. 3 illustrates the speed-torque curves obtained from a typical series motor with drum switch dynamic braking control. As before, each curve is labeled with its corresponding drum switch position, as *H*1, *H*2, *L*1, *L*2 correspond to the first and second positions hoist and the first and second positions lower.

A typical cycle is also sketched on this chart, by means of arrows. It includes hoisting, deceleration by gravity and the motor brake, lowering, deceleration by dynamic braking and finally stopping with the aid of the motor brake. In this case a hook load is assumed requiring 100 per cent hoisting torque at the motor.

Acceleration in the hoisting direction is accomplished in the same manner as described for acceleration of a crane trolley in the forward direction, Fig. 2. The conditions of speed and torque move through points, *A*, *B*, *C*, *D*, *E*, *F*, *G*, *H*, to *I*. Here the load is rising at 93 per cent speed, and the motor torque of 100 per cent is balanced by the load torque. The motor does not run at 100 per cent speed with 100 per cent load, because of the resistance of the series brake which is connected in the circuit.

To decelerate, it is common practice to notch the drum switch handle rapidly to the "off" position. This is practical in the hoist direction, for gravity assists the motor brake. The conditions of torque and speed follow the arrows through points *J*, *K*, *L*, *M*, *N*, *O*, *P*, *Q*, to *R*. Here the drum switch handle is on the "off" position, the motor is disconnected from the line, exerting no torque, and the brake is set. The load finally comes to rest at point *A*, under the combined action of gravity and the motor brake.

It should be noted that complete deceleration could be accomplished by gravity alone, by notching the controller to the first or second positions hoist. The motor does not exert enough torque to support a hook load



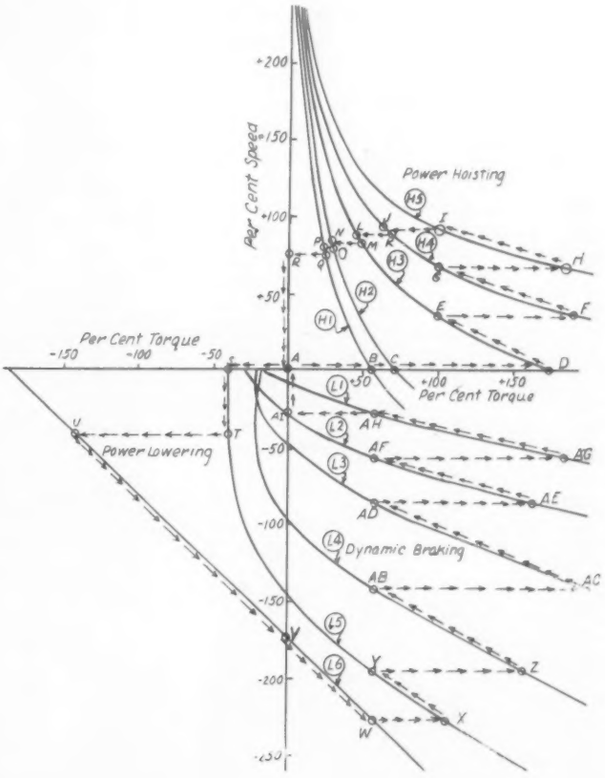


Fig. 2 (Left)—Speed-torque chart for a standard reversing-plugging crane trolley motor. Fig. 3 (Right)—Speed-torque chart of a typical series motor with drum switch dynamic braking control

of 100 per cent, on either of these two positions, and the motor would slow down to standstill with the brake released. As soon as points *C*, if on the second drum switch position, or *B*, if on the first drum switch position, were reached, the drum switch handle should be notched to the "off" position, setting the motor brake, which would then act to support the load.

The load is now suspended in the air and we wish to lower it. In lowering, the torque required at the motor is less than that required in the hoisting direction, because of reversed efficiency. To study this point more closely, let us consider the following equations:

Torque at motor (hoisting) = (horsepower at load) × 5252 ÷ (motor speed in revolutions per minute) × (mechanical efficiency).

Torque at motor (lowering) = (horsepower at load) × 5252 × (mechanical efficiency) ÷ (motor speed in revolutions per minute).

Solving these two equations, we obtain:

Torque at motor (lowering) = torque at motor (hoisting) × (mechanical efficiency)^2.

Assuming 75 per cent mechanical efficiency, and substituting the 100 per cent hoisting torque used in our example:

Torque at motor (lowering) = (100 per cent) × (75 per cent)^2 = 56 per cent torque.

The torques referred to in this calculation are the torques supplied by gravity.

First Positions Notched

To hasten acceleration in the lowering direction, the drum switch handle is notched rapidly over the first four positions, and placed on the fifth position lower, *L*5. Power is applied to the motor in the reverse direction, producing 40 per cent motor torque, point *S*, and the brake is released. The load then starts downward under the combined influence of gravity, corresponding to 56 per cent torque, and the 40 per cent torque supplied by the motor. At point *T* we decide that acceleration could be more rapid, without an excessive torque peak, and notch the drum switch handle to the last position lower, *L*6. The motor now supplies 145 per cent torque, point *U*, which with the 56 per cent torque supplied by gravity accelerates the load rapidly.

At point *V*, the motor torque is zero, but the pull of gravity on the load continues to increase the motor speed along curve *L*6. A reversal of armature current now occurs automatically, reversing the motor torque to the upward direction. The motor starts to pull back on the load, and dynamic braking is started. The lowering speed continues to increase, however, to point *W*, when the braking torque of the motor is balanced by the gravity pull on the load. The load is now lowering at 230 per cent speed, and the motor torque of 56 per cent is balanced by the torque produced by the hook load.

To decelerate, the drum switch is notched back to the fifth position *L*3. This increases the dynamic braking torque to 108 per cent, point *X*. Since this is greater than the torque exerted by the pull of gravity, the motor speed is decreased until point *Y* is reached, when braking torque and gravity load torque again are balanced. The drum switch handle then is successively notched back, through the fourth, third, and second, to the first position. Speed and torque values, during this time pass through points *Z*, *AB*, *AC*, *AD*, *AE*, *AF*, *AG*, to *AH*.

The drum switch is now on the first position lower, *L*1, and the load is traveling downward at 25 per cent speed. Final deceleration might be accomplished by plugging, as described for Fig. 2, but the most common method is that of setting the motor brake. This is practical, because the speed has already been reduced to a low value of 25 per cent, by dynamic braking. The wear on the motor brake is proportional to the square of the speed, so that with 25 per cent speed, the brake wear is 1/16 of that which would be obtained if the motor were decelerated from 100 per cent speed by the brake alone. The drum switch handle is notched, therefore, to the "off" position, removing power from the motor, and setting the motor brake. Motor torque is reduced to zero, point *A*1, and the motor brake friction reduces the load speed to standstill at point *A*.

In the succeeding articles, effects of changes of connections and resistors on the shape of the speed-torque curves will be discussed. Facility in the visualizing of a crane's operation in terms of speed-torque curves will materially aid in the application and adjustment of crane control.

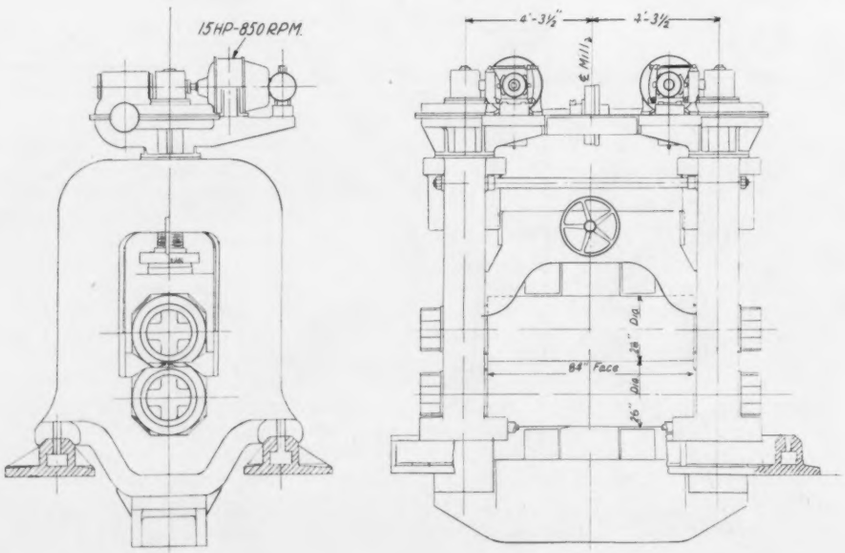
(To Be Continued)

Perfects New Type Cold Mill To Simplify Sheet Planishing

WITH increased demand for full-finished sheets of wide widths ranging from 48 to 72 inches, considerably difficulty has been experienced in the planishing operation. To overcome these troubles, Lloyd Jones, manager, E. W. Bliss Co., Salem, O., has perfected a new type of cold rolling mill.

A feature is that it will not be essential to purchase new mills, for in most cases, the present housings, bed plates and rolls can be altered for introduction of the method of the new process. From the illustration, it will be observed that at the center of the two rolls are located short rolls which are adjustable readily in a vertical direction. Instead of putting crowns on the rolls as heretofore, or changing the shape of the rolls by use of gas flames, all that is required is to adjust these short contour rolls in proportion to the width of the sheet and the amount of work to be performed.

As this adjustment can be made instantaneously, the problem of shap-



ing the rolls to suit the shape of the sheets being rolled becomes a simple matter and one which requires no great skill.

Another innovation is the use of antifriction oil bearings in place of the customary cold mill brasses. This, it is claimed, prevents troubles experienced with heated necks.

In addition to the ease with which the shape of the roll can be changed, another advantage said to be gained is that the work performed is distributed over four bearings for each roll, in place of two as previously. This means that the pressure which can be applied to the sheet is double the amount practicable on most 2-high cold mills.

Although the illustration shows motor-driven screwdown, this is not essential for mills with ordinary wrench screwdown can be used with good advantage.

Steel Containers Made Acid Proof

ONE method for making steel containers acid proof is to line them with a material which possesses this characteristic. The refractories division of the Patterson Foundry & Machine Co., East Liverpool, O., has during the past year has made a series of developments along this line bearing upon industries having corrosion problems incident to the use of sulphuric, nitric, muriatic, acetic and lactic acids, as well as chlorine, sodium hypochlorite, aluminum chloride, hydrogen peroxide, and the like.

First of these developments is a new type of pure white, acid-proof vitreous lining blocks and second is a new white acid-proof cement for use with them; both are marketed under the tradename of Porox. The third is a new and novel method of applying the blocks to steel tanks; briefly, the cement holding the blocks is reinforced with steel wire or expanded metal welded to the inner surface of the receptacle.

Work Done on the Job

This method was employed recently in an installation of a battery of four glaze tanks for the Mount Clemens Pottery Co., Mount Clemens, Mich. These tanks, each 7 feet 6 inches in diameter, 5 feet deep and made from ⅜-inch steel plate, were fabricated in the Patterson plant.

Expanded metal linings were spot welded to the interior surfaces, after which these surfaces were given a protective coat of asphalt paint. The underside of the tank tops, manhole openings, and manhole covers were covered with ⅛ inch of lead. Installation of the acid-proof linings was done on the job after the tanks had been mounted on their concrete foundations; the expanded metal liners were gradually covered with acid-proof cement and the acid-proof blocks set in place.

Interiors of the tanks present a pure white surface which not only has all of the acid and chemical resisting characteristics of porcelain, but offers maximum resistance to abrasion.

Chart Gives Nickel Alloy Steel Compositions

A circular chart designed to indicate at a glance the nickel alloy steel compositions and treatments required to develop yield points up to 175,000 pounds per square inch in section sizes varying from 1 to 12 inches, have been prepared for distribution by the International Nickel Co. Inc., 67 Wall street, New York. Figures shown on the chart are based on numerous tests, it is reported, and may be used as a general guide to the selection of steels for bars, shafting and forgings of single shape. The chart is enclosed in a handy indexed folder for filing. Copies will be sent to any reader of STEEL upon request to the company.

FABRICATING PIPE AT BOULDER DAM: First views as work gets under way in the field fabricating plant of the Babcock & Wilcox Co. (see STEEL, *July 25, 1932, p. 32), where 14,500 feet of steel pipe, varying in diameter from 8½ to 30 feet, will be formed, welded, machined and X-ray inspected before being lowered in sections from a cableway to construction tunnels. The pipe is to be used for main conduits, penstocks, diversion and outlet tunnels, providing passage for water from the dam intake towers through the power house and to the discharge outlets.*

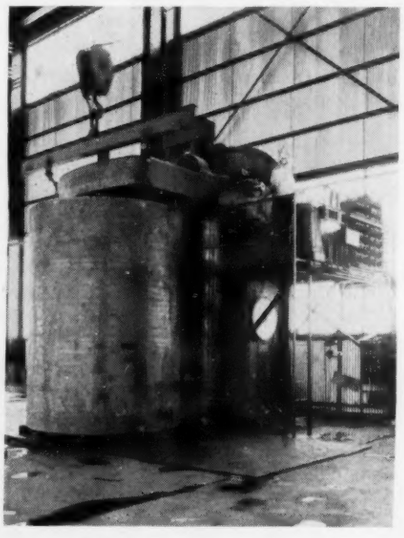
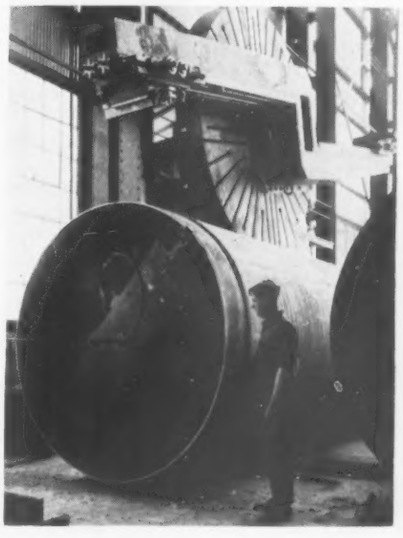
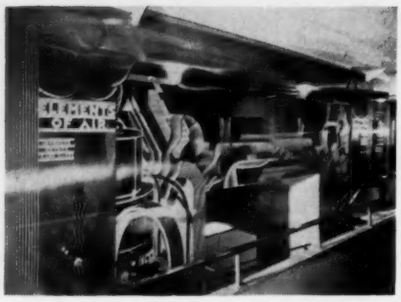


Illustration at the left shows an 8½-foot diameter pipe being formed from a 1-inch plate on a vertical roll forming machine built by the Baldwin-Southwark Corp. Rolls are 3 feet in diameter and 12 feet high.

Center illustration shows two sections of pipe mounted on rolls under an automatic fusion welding machine, built by the General Electric Co. and adapted by the Babcock & Wilcox company. A girth seam is about to be welded. The spider for holding the seam in alignment and constituting a backing member for welding is seen mounted within the section.

Illustration at the right shows a machining operation on the end of a pipe section, with the internal spider distinguishable in the foreground. A large horizontal boring mill or facing lathe is shown in the background, the latter having been designed and built by the Babcock & Wilcox company. Similar operations later will be carried out on steel pipe 30 feet in diameter.



Seen  *at A* CENTURY OF PROGRESS

USING polished stainless steel as his canvas and the sand blasting nozzle as his brush, a young New York artist has produced a new type of mural which is attracting much favorable comment from visitors to the Union Carbide & Carbon Corp. section of the exposition. Several of these murals in large size (one shown above) are displayed prominently at this exhibit.

The stainless steel was produced by the Republic Steel Corp., Youngstown, O., but credit for the development is given to Albert A. Aster, the artist who has combined the technique of two arts and three crafts to create the new medium. The method begins with a designer's sketch, which is enlarged to exact size of the finished product. The sketch then is perforated like a dress pattern and superimposed on a tough "resist" paper which in turn has been mounted on the stainless steel.

The sketch is outlined on the resist paper by powdering lampblack through the performations and expert carvers cut the design into the paper. The final step consists in lifting the resist paper a section at a time as the design specifies and sandblasting the steel underneath.

Three types of blast are used, making possible three different tones, ranging from a heavy tone which contrasts sharply with the highly polished steel to a veil that can be bled into the bright surface of the metal. After blasting, the steel is treated with oil to give it a warm finish.

The process was in its experimental stages as early as two years ago, when stainless steel panels were made for the Earl Carroll theater, New York. Three tones, detailed filagrees and shading were not developed, however, until Aster four months ago undertook the Chicago murals. The artist now is working on a head of President Roosevelt which when completed also will be displayed in the exposition.

♦ ♦ ♦

Displayed in the space of the Rawlplug Co. Inc., New York, is a complete line of the company's products, including fiber screw anchors; three-point drills for masonry; new aluminum and lead bolt anchors; crowners and lock crowners for sealing and concealing bolt and screw heads and nuts. Samples of the various sizes and types of each are mounted on large display panels with illustrations of their use. An attractive color scheme of blue, orange, silver and black, is used.

♦ ♦ ♦

Representing the most modern architectural conception in low-cost residences is the porcelain enameled all-steel house of the American Rolling Mill Co., Middletown, O., and Ferro Enamel Corp., Cleveland. Price of this house in commercial production is within the $5000 range.

Containing seven large rooms, including living room, dining room, kitchen, garage, laundry and heater room, four bedrooms, two sun decks and solarium, it was built by the Insulated Steel Construction Co., Cleveland. The company used its newly developed frameless steel construction which makes rapid field erection and economical building costs. Details of this construction were presented in the Aug. 29, 1932, and April 3, 1933, issues of STEEL.

The residence is fire resistant, vermin proof and heavily insulated. It is highly wind resistant, lightning

safe and economical to maintain. The coral shaded porcelain enamel exterior is durable and permanent and will never require painting. Grooved strips of stainless steel hold the enameled siding in place.

Editors of the *Ladies' Home Journal* supervised the furnishing of the house in keeping with the modern ideals of this new type of home.

♦ ♦ ♦

Structural steel encased in galvanized sheets comprise the tower for the world's largest thermometer, the exhibit of the Havoline Motor Oil Co. Triangular in shape and 218 feet tall, it is visible from nearly all sections of the fair grounds, thermometers being located on each of the three sides. Neon tubes are used instead of ordinary mercurial tubes and are actuated by controls regulated by apparatus in the base of the structure.

The latter consists of a mercury-filled metal tube, exposed to the air, which leads to an electric controlling

device operated by a small motor. The end of the tubing is in the form of a spiral. This spiral expands or contracts with temperature changes, causing the control to operate the various temperature blocks of the neon tubes. About 100 tons of structural shapes were required in building the thermometer tower.

♦ ♦ ♦

About 15 per cent of all persons visiting the fair inspect the exhibit of the United States Steel Corp., officials estimate. Recently this has meant an audience of 10,000 to 35,000 daily. Total attendance at the fair has been running approximately 200 per cent over that of the Columbian exposition of 1893 when 21,500,000 paid admissions were recorded during its entire period. Operation of the miniature bessemer converter topping the central figure of the Steel corporation exhibit attracts considerable attention, pouring at about 9-minute intervals. Oil is used to depict the flow of molten metal from the converter. A chemical mixture provides smoke, while an effective indirect lighting system simulates the heat and glow of liquid steel. (Illustrated in STEEL, July 17, page 9.)

WHY PAY THE PRICE OF INDIFFERENCE?

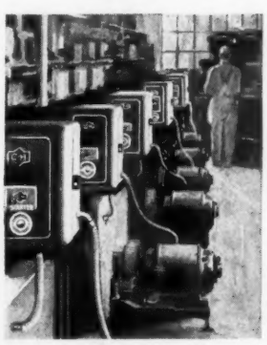
"BUT BOSS WE'VE GOT TO DELIVER!"

BROKEN delivery promises exact heavy penalties. Lost orders . . . infuriated customers . . . discouraged salesmen. What a price to pay for a moment's carelessness!

If production falters as sales improve, your plant, likely, is paying the price of *indifference* toward Motor Control. It should be stopped, for it is a needless, damaging waste.

Motor Control is the one link between human intelligence and motorized machines. It has a bearing on the speed and dependability of production, the quality of workmanship, the economy of operation, the cost of power and maintenance, the safety of men, motors and equipment.

Motor Control is too important to warrant indifferent purchase. Specify Cutler-Hammer Motor Control for every motor or motorized machine you buy. Motor builders recommend it. Leading machinery builders feature it. Electrical wholesalers stock C-H Motor Control and Safety Switches for your convenience. CUTLER-HAMMER, Inc., *Pioneer Manufacturers of Electric Control Apparatus,* 1211 St. Paul Ave., Milwaukee, Wis.



Prove It in Your Plant

Select one lagging machine or a group of such machines. Ask a C-H engineer to recommend Motor Control changes and judge by results only. See production revitalized, steps saved, delays reduced. Such a test will disclose the true importance of Motor Control in your plant and pay real dividends for years to come.

CUTLER HAMMER

The Control Equipment Good Electric Motors Deserve

(A-8017)

IMPROVING OPEN-HEARTH FURNACE DESIGN

BY WILLIAM C. BUELL JR.

Part VI—Open-Hearth Furnace Ends

(Forty-Third Article of Series)

WITH the gas port selected and enclosed in its protecting brickwork, and the width of the end established the next step is to consider the design of the bridge wall. Examination of Fig. 45 indicates that the majority of designers develop the crest of the bridge wall at right angles to the longitudinal center line of the end and usually the riser to the crest is merely a continuation of the inner face of the air uptake.

The designer of four furnaces, D in elemental form, I in a unique development and J and P in a good arrangement, have developed an angle crest which is of decided advantage in operation. Consider the air flow over common form with the crest at right angles to the center line. The air moving upward in the uptake and under the influence of thermostatic head and possibly of subatmospheric conditions in the effluent furnace end, flows over the crest in general paralleling the furnace center line and tends to streamline directly to the far end of the furnace acquiring turbulence and mixing effect only as it passes A_2 from the constriction of the knuckle area and the effect of the paralleling fuel stream.

Results in Excessive Wear

Turbulence and mixing effect are relatively slight with long flame and uneconomical firing as the result. At the effluent end the furnace gases streamline into the end and in the relatively small length of the downtakes are required to turn rapidly at more than right angles to enter the downtake which results in excessive wear and erosion of all the surfaces with which the furnace gases come into contact.

In this method of design the area A_4 is at a minimum while the largest possible area at this point is much to be desired.

An infinitely better design from several viewpoints is where the bridge wall crest, J, Figs. 57 and 59, is angled to at least the 45 degrees as shown. The angled development of this element is less than that figure in furnaces D, J and P and much greater in the unusual development in furnace I.

The effect of this treatment is first to materially increase the area A_4 by lengthening its chord; second, it presents a tapering entrance to the downtakes. The effect on the incoming air is to cause the air to roll over toward the fuel stream and meeting the air coming from the opposite side to form with the fuel column a turbulent volume, thus minimizing streamline effect, reducing velocity, promoting more thorough mixing and so accomplishing the combustion of the fuel in lesser furnace length.

Conditions Are Reversed

At the effluent end, the conditions of flow reverse. The furnace gases streamline through the knuckle and, under the subatmospheric pressure condition in the downtakes, move under constantly decreasing velocity, which comes from an increasing transverse area angling over the crests into the downtakes with a decided easing of centrifugal effect when turning and a consequent reduction of erosive action.

It will be convenient to locate the fuel port ends of the crests at the approximate height of the top of the fuel nozzle and they may be developed either as horizontal surfaces or slightly angled either up or down toward their termination which will be the skewline of the roof. The scarps and risers then appropriately are developed, convenience principally dictating their form.

With the gas port properly located and the bridge wall crests developed, the outer roof may be designed. The principal factor in the establishment of the outer roof slope is that the area A_4, which is that immediately over the bridge wall crests and the gas port at its intersection with the crests, be greater than the area A_2. It seems probable from the operating records of the cited furnaces, that the area at A_4 should be about 20 per cent greater than that at A_2 to assure that there will be no velocity increase in the gas fluids over that at A_2 and to secure the maximum of operating economy. With the area A_4 selected it thereupon becomes a simple matter to establish the outer termination of the end slope at such a height as to produce the necessary area and the outer roof slope then may be developed.

In producer fired furnaces the slope will be steep, often more than 10 degrees greater than the apron slope. However, the steep slope appears advantageous to combustion results. The roof arc should have an included angle of not less than 60 degrees and the skews should be developed in accordance with the principles described for the main roof.

On account of the probable steepness of the outer roof slope, it is better to construct this roof with 6-inch wide silica brick so that the exposed corners will be smaller.

There is no part of the open-hearth furnace brickwork that will react so advantageously as a result of ample design, as will the uptakes. In the effort to minimize the overall furnace length, the uptakes in a great many instances suffer design abridgement. This will be apparent from an inspection of the fluid velocities in the downtakes A_5, Table LX.

In designing the uptakes, the factor upon which they are premised will be that of the effluent waste gas, this being of the greater volume, at higher temperature, and the source of damage to the refractories.

To secure proper and economical upkeep design the velocity (at 32 degrees Fahr. equivalent) of the effluent furnace gases from producer gas firing should not exceed 15 feet per second, 12.5 feet per second for mixed gas, or 10 feet per second for the concentrated fuels. The lower velocity would be better, of course, as a maximum, for all of the fuels, but on account of the larger volume of the furnace gases from the combustion of the leaner fuels, the structure to accomplish the more desirable velocities would become so great as to impose major obstacles to this desirable accomplishment. This is but one of the several disadvantages inherent to the use of producer gas.

How Chart Is Used

A chart, Fig. 63 has been prepared from which the area of the combined downtakes, A_5, may be found, based on the hourly steel production; and, the proper nozzle area, A_3, at the termination of the fuel port for producer or mixed gas may be determined. The chart is used by entering scale A at the selected production, proceeding vertically to the appropriate curve B, for the fuel practice, a horizontal line to scale C indicates the heat release, a vertical line from the curve D of fuel type will in passing through scale E indicate the volume of the furnace gases. This vertical line is continued to the velocity curve F and in case the fuel is regenerated is extended to the appropriate nozzle velocity fac-

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tor of curve H. A horizontal line from the intersection at curve H to scale I indicates proper minimum nozzle area for the stated velocity. A horizontal line from the intersection of the appropriate velocity line curve F to scale G will offer the minimum combined downtake area A_8. Where cold or nonregenerated fuels are used this will be the area of the air uptakes, but where regenerated fuel, such as producer gas, is used the area of the air uptakes will be the value found on scale G, minus the area of gas nozzle as in scale I.

In this curve the volume-density factor for the furnace gases is 2.653 (3000 degrees Fahr.) and for the producer or mixed gas at the port nozzle 2.326 (2200 degrees Fahr).

The example for producer gas shown in the dash line on the chart is 17.5 tons of steel per average hour, 460 cubic feet of furnace gas, 10.25 square feet of gas nozzle area, and 80.5 minus 10.25 or 70.25 square feet of air uptake area from the 15 foot per second waste gas velocity.

The dotted line, the example for oil or tar from the same production figure, gives about 280 cubic feet of furnace gas per second, and an air uptake area of 75 square feet for a furnace gas velocity of 10 feet per second.

The nozzle areas, A_3, of the fuel port are indicated at radii that necessitate considerable velocity for volume delivery. From A_3 rearward, the area should increase constantly until the fuel uptake, D, Fig. 58, section A_5 is fully developed. The area of the fully developed fuel uptake should approach double that of the nozzle A_3.

Given the areas of the air and gas uptakes, they may be developed as to width which will give an arrangement similar to A_3, Fig. 58. The refractory thickness for the front and back wall, 18 inches, and of the division walls, 22½ inches, is conventional.

Long Uptakes Are Efficient

Better operating results will be secured if the uptakes are developed of relatively great length. With the uptake widths, wh and wd, established the length (Section C-C Fig 57) is found and the general end design for producer gas firing complete.

The end, as described, with modification as to throat length, Fig. 62, and general areas, will be suitable for preheated mixed gas firing if the gas port, as shown in Fig. 57, is replaced by such a device as the Rose sliding port. When this type port is in the inner position, it affords a nozzle development for the creation of suitable gas firing velocities, Fig. 63; but when withdrawn, it provides a sufficient gas downtake area. By this arrangement ample furnace gas enters the regenerators for the checker brick to absorb sufficient heat and to raise the mixed gas temperature through the required range which exceeds the range for producer gas by 1000 degrees Fahr.

The producer gas end as described is the best arrangement for coke oven, cold mixed or natural gas when side ejection of the fuel is practiced. In this case, the conventional gas port is omitted and the bridge wall crests are extended to join each other. It is best that the slag pockets be rebuilt into a single chamber, or at least that the division wall be opened to the greatest possible extent so that the flowing air or furnace gas is equalized.

Different Fuels Are Fired

Often, through a readjustment of fuel economics, furnaces designed for producer gas firing are converted to be fired end injection, with oil, tar, coke oven, cold mixed or natural gas. In such circumstances the ends including the slag pockets should be rebuilt completely in accordance with the general scheme to follow. Occasionally, it is desirable to fire producer gas designed furnaces with driven fuels without material end changes. In such cases a water-cooled burner is introduced through the back wall and the approximate center of the fuel port to the nozzle and openings made to connect the slag pockets together. The fuel burner should be arranged to permit its withdrawal from the gas port when firing at the opposite end. Only fair economy and results ordinarily are obtained from this make-shift.

The end design of furnaces using cold-driven fuels, end-fired, such as oil, tar, coke oven, blast furnace and natural gas, or combinations of these fuels while following the same general scheme as the ends for producer gas firing vary considerably in detail. A typical design suitable for end firing the fixed fuels is shown in Figs. 59 and 60.

The principal difference in the two types is found in the number of uptakes, the producer gas fired furnaces having three, the central or gas uptake leading from an outer slag pocket connected to the gas regenerator, while the two outer air uptakes lead from an inner slag pocket connecting with the air regenerator, both systems being totally independent while for the end firing of cold fuels but two air uptakes from a single slag pocket are used in the construction.

It is assumed that the developed size of a bath to hold a stated molten metal tonnage and to produce a given average hourly tonnage will be substantially of the same shape and volume irrespective of the fuel that will be used. In the following discussion, a comparison of the sizes of the several components of both types of furnace ends is based on this assumption being correct.

As in the previous case the design of the end begins with the establishment of a proper area at the knuckle A_2. The smaller volume of furnace gases is developed by an equal heat release of the more concentrated fuels. This immediately indicates a smaller area A_2 than for producer gas practice. This, however, offers an opportunity for an enlargement of this area to bring about the desirable lower velocity but which premises an enlargement of the area. As may be found from the use of Fig. 61 a considerable reduction of the velocity of the gases of the concentrated fuels is possible, even with a lesser area A_2, than is required for equal producer gas practice.

Through the use of a bath of similar dimension for equal tonnage in any fuel practice, the width of the ends probably will be approximately the same for any case. Therefore, the reduction of area at A_2 will be accomplished largely by building the monkey wall cheeks further toward the center line of the end, and possibly dropping the roof knuckle somewhat.

For better combustion conditions it is desirable that the area A_2 be held to such figures as may be found through the use of Fig. 61. The establishment of the basing point, the height of the junction of the end bank and the apron above the foreplate line may well be similar to that for producer gas practice for which 12 to 15 inches is recommended.

In the furnaces designed primarily for the end firing of driven fuels it appears to be an underlying idea of most designers that the apron slope should be nominal. In furnaces D, F and H, Fig. 45, the slope is nearly ab sent; in furnace M, slight at 1 : 6; in furnace B, there is a decided slope of about 1 : 4; while in furnace E, al though of short length, the apron slope is considerable at 1 : 2.

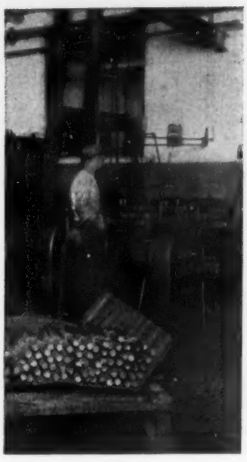
Recommends Sloping Aprons

While a horizontal apron and firing plane may be the best design with long flame firing for preventing excessive metal loss and deoxidation as may occur when primary combustion takes place in immediate proximity with the metal, there is no excuse for long flame firing in present-day operation and, consequently, sloping aprons should be used. The slope of the apron may be similar to that offered for producer gas design, 20 to 22 degrees, while the length of the apron should be in accord with figures developed by the use of Fig. 62.

The design of the port through which the fuel is introduced requires somewhat different treatment than that of producer gas firing. It will be seen by examination of Fig. 43 that in two furnaces using concentrated fuel, D and E, the burner lies almost totally exposed to the furnace gases in a trough-like arrangement. In furnaces B, F, H and M, the fuel burner is protected by surrounding brickwork. In the double slag pocket furnaces, I and P, the burner while introduced through the normal gas port is surrounded, when the particular end is the effluent end, by furnace gases flowing to the outer slag pockets.

(To be Continued)

Making the Most of



METHODS AND MATERIALS

IN SPRAYING metal by the oxy-acetylene gun, the thickness of the coating depends upon the kind of metal and the rapidity with which the gun is passed over the surface. An average speed of spraying will deposit approximately 0.003-inch of the soft metals, such as lead, tin and cadmium, 0.002-inch of zinc, 0.0015-inch of copper, bronze, and the rest of the great range of metals having melting points between 1000 and 2000 degrees Fahr. High melting point metals, such as monel, stainless steel, and the like, will deposit at the rate of 0.001 to 0.00125-inch per coat. On flat work, an average operator can cover an area of about 120 square feet per hour with the soft metals, and an experienced operator can do even better.

\$ \$ \$

Brightness, while important from the standpoint of appearance, also has a direct bearing on rust resistance of cadmium plate. Tests have shown that a plate which comes from the plating bath bright lasts considerably longer than a dull plate of the same thickness due to the fact that a bright deposit is close grained. A dull plate is made up of large crystals and is more porous. By retaining moisture and corrosive elements to a greater extent, it is corroded more quickly. Specifications as to luster are difficult to draw up since base metals differ so widely. About the only way of dealing with brightness is the simple requirement that the plate be lustrous and free from gray or burned areas.

\$ \$ \$

RECOGNITION of the advantageous characteristics of polished stainless steel for street signs led an enterprising residential city in the East to engage in an interesting experiment. To provide work for local unemployed, a novel type of sign was developed, consisting of a wood base with letters formed from small buttons or disks of the stainless steel. Signs of this type can be fabricated at minimum cost because the disks, either cast or wrought, can be manufactured on a quantity basis.

\$ \$ \$

Development of nickel alloy steel castings for abrasion resisting service has made considerable headway recently. The ease of machining and heat treating the air-hardening nickel-chromium-molybdenum steels has extended their use to fields formerly dominated by other materials. These steels have found application particularly in machinery for excavating, construction and road maintenance.

\$ \$ \$

A new method of polishing gray and malleable iron specimens for metallographic examination utilizes jewelers rouge which consists of a

rouge cast in a stearic acid base. Sufficient water is used to act only as a lubricant. It is claimed that this method eliminates any tendency of the graphite constituent to pull out.

\$ \$ \$

Whatever the former limitations of zinc-base die castings—whether size or intricacy of design or wall thickness—they have been in large measure overcome through the development of new processes and new alloys, until areas of 720 square inches, wall thicknesses of 0.025 inch and weights up to 20 pounds are now possible in regular production.

\$ \$ \$

Piercing and blanking operations, when combined in a progressive die, are performed more accurately than if the piercing is done later in a second operation. Cost of the progressive die is about the same as for two individual dies. In production, the operation of the two stage dies is almost as rapid as a single blanking die, so that the pierced and blanked work is obtained at nearly the same rate as the blanked pieces alone in a single die.

\$ \$ \$

In high-pressure steam plants where the pressure is 1300 pounds or higher and the temperature exceeds 900 degrees Fahr., valves and fittings made of 5 per cent chrome steel are being used to an increasing extent.

\$ \$ \$

A NEW synthetic resin which promises to be of great commercial utility has been perfected by an English electrical company. The material is said to be weatherproof, rust resisting, not easily scratched or broken, and remains unaffected by the action of common dilute acids with the exception of nitric acid.

\$ \$ \$

Tantalum carbide wire drawing dies are being used successfully on steel in sizes down to 0.010 inch and on copper in sizes down to 0.030 inch. They are being used on both wet and dry drawing and also are in extensive use in hot drawing tungsten and molybdenum. Generally speaking, these dies will pay for themselves down to the sizes mentioned at which point diamond dies prove to be cheaper.

\$ \$ \$

A foundry set-up in a Cleveland plant, capable of producing 120 finished castings in 8 hours, has proved its worth many times on large special orders with which time and production schedules are vital factors. The set-up consists of a continuous conveyor in the form of an oval, an automatic molding machine, a pneumatic vibrator and conveyors and equipment for conditioning the sand. Twenty-five aluminum flasks travel through the molding and casting cycles on the continuous conveyor. The flasks are 43 inches long and 28 inches wide with 6-inch cope and 6-inch drag. They are used for making aluminum castings for street light units, cast-iron range frames and doors, and cast-iron bases for floor model ironers.

SCANNING THE FIELD OF TECHNOLOGY

A Digest of Important Developments Pertaining to the Production, Processing, Application and Performance of Steel

Corrosion

By R. F. Passano and F. R. Nagley, in a paper presented at the annual meeting of the American Society for Testing Materials in Chicago, June 26-30, preprint, 13 pp., 1 diag., 5 charts, 3 tables.

Presentation of consistent data showing the influence of water velocity and time on the corrosion of iron. With temperature, oxygen concentration, composition of water, area of specimen, surface condition of specimen and composition of metal controlled, the effects of water velocity and time were studied in an immersion test. Successive experiments were conducted at intervals between 1 and 60 days at a velocity of 1 meter per minute, between 1 and 30 days at 2 meters per minute, and between 1 and 15 days at 5 meters per minute. It is shown that the losses from successive experiments under the same essential conditions did not differ by more than should be left to chance.

—STEEL, 7-31-33

Iron Alloys

By T. Holland Nelson, in Product Engineering, July, p. 258, 3 pp., 2 ills., 5 tables, first of two installments.

A classification of the chrome and chrome-nickel iron alloys into four main divisions, giving their corrosion resistant and physical properties, their fields of application and the heat treatments required. The four main divisions are: Iron with varying percentages of chromium; iron with varying percentages of nickel; iron with varying percentages of chromium with nickel present in somewhat smaller proportions than the chromium; and iron with nickel present and chromium also present in smaller proportions than the nickel content.

—STEEL, 7-31-33

Creep of Metals

By H. W. Gillett and H. C. Cross, in Metals and Alloys, July, p. 91, 8 pp., 7 ills., 1 table.

Obtaining reliable values for creep of metals at high temperatures is important, since some of the most difficult engineering problems of today have to do with applications of metals at extreme temperatures and pressures. The authors point out that it is imperative that creep testing methods be refined and unified so that the results of different laboratories, and of different test units in the same laboratory, will give strictly comparable results.

—STEEL, 7-31-33

Gases in Metals

By Lewis Reeve, in a paper to be presented at the Detroit meeting of the iron and steel division of the American Institute of Mining and Metallurgical Engineers in October, preprinted, 21 pp., 4 ills., 2 charts, 7 tables.

Report on new methods evolved in the laboratories of the A. O. Smith Corp., Milwaukee, for determining the gas content of steels by the vacuum fusion system. Considerable saving in time has been effected by certain changes in equipment and procedure.

—STEEL, 7-31-33

Metals and Autos

By P. M. Heldt, in Automotive Industries, July 15, p. 64, 5 pp., 4 ills.

Discussion of how suppliers of metals and alloys have helped in the progress of the automotive industry by providing improved materials of construction. Chrome-nickel steel, alloy spring steels, magnet steels, nitriding, alloy cast iron, zinc alloys, and aluminum alloys represent a few mentioned contributions of metallurgists to automotive development.

—STEEL, 7-31-33

Press Feeds

By R. L. Payne, in Machinery, July, p. 700, 5 pp., 9 ills.

Description of advances made in automatic combination feeds for presses. By combining as many as three different types of feeds, a continuous flow of parts is maintained through multistation dies in this high-speed type of press work.

—STEEL, 7-31-33

Alloy Steels

Oxy-Acetylene Tips, July, p. 154, 1 p., 1 ill.

Citation of examples showing how alloy steels eliminate dead weight, resulting in benefits which overshadow the slightly increased first cost of these special steels.

—STEEL, 7-31-33

Roll Grinding

By H. J. Wills, in a booklet recently published by the Carborundum Co., Niagara Falls., N. Y., 45 pp., illustrated.

This booklet comprises a consolidation of a series of articles on the theory and practice of roll grinding published in recent issues of *Machinery*. The information was compiled with a view to reducing roll grinding to a science by the removal of variables and the adoption of standardized procedure.

—STEEL, 7-31-33

Hardening Dies

By William E. Snow, in Machinery, July, p. 697, 2½ pp., 2 diags.

Outline of methods used by some of the largest manufacturers of silverware and jewelry for hardening expensive impression dies. Requirements for good dies, suitable steels, etc., are included. Correct method of quenching and recommended quenching equipment will be described in a later article.

—STEEL, 7-31-33

Die Castings

By W. M. Peirce, in Product Engineering, July, p. 263, 2 pp., 4 ills., 2 tables.

Although as a result of recent metallurgical advances, numerous zinc die-casting alloys have been developed to meet specific exacting requirements, one or another of the four alloys described in this article are cited as suitable for most requirements.

—STEEL, 7-31-33

Pressure Vessels

Abstract of a paper by F. O. Leitzel, presented at a recent meeting of the National Association of Power Engineers in Pittsburgh, in Welding, June, p. 249, 4 pp., 5 ills.

Early experimental work, welding procedure and methods of inspecting and testing as employed by the Blaw-Knox Co., Pittsburgh, in the fabrication of welded pressure vessels.

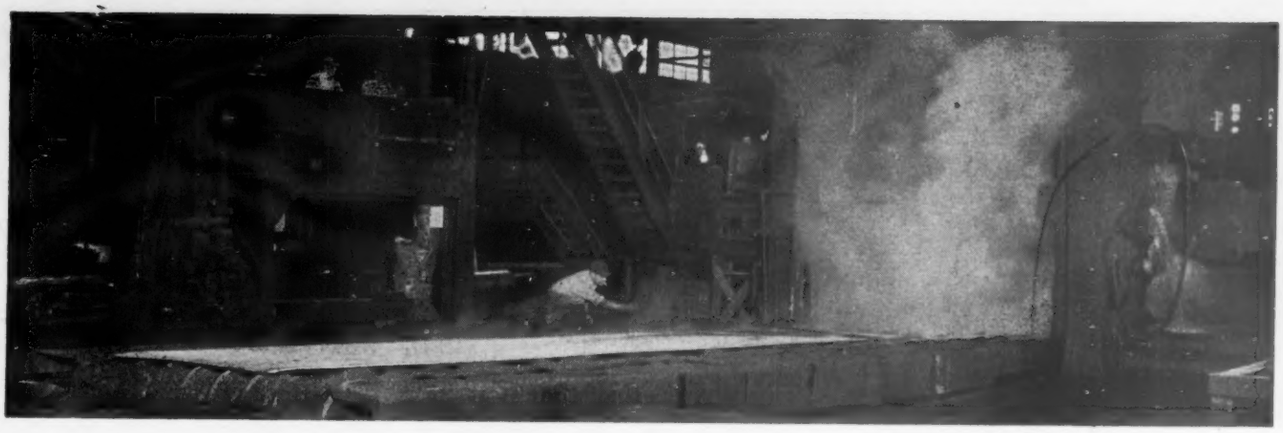
—STEEL, 7-31-33

Gear Grinding

By G. E. Katzenmeyer, in Abrasive Industry, August, p. 6, 2 pp., 4 ills.

Methods adopted for grinding the teeth of large gears used in electric locomotives. Rigidly constructed grinding equipment and close inspection of the work are required to maintain the close tolerances specified.

—STEEL, 7-31-33



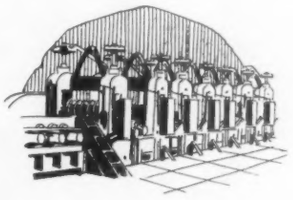
PROGRESS IN STEELMAKING

ONE of the characteristics of a newly designed squaring shear is the slide which can be stopped instantly at any point of its stroke and then returned without completing the cycle. By this arrangement sheets can be cut into any desired limit instead of a complete cut being made, thus affecting savings in the preparation of blanks. A side shear which consists of cross-cut blades positioned at right angles to the long shear blades, is provided in addition to a beveling attachment for cutting V or Y edges for welding.

♦ ♦ ♦

Crushing metal turnings is facilitated by an improved unit equipped with heat treated cast steel hammers tipped with a welded-on wear-resisting alloy. Side and breaker plates are made of manganese steel. Tramp metal accidentally fed into the hopper is led into a metal catcher. In addition, a shear-pin safety device on the hinged breaker plate and the drop bottom cage operated by one man, serve to prevent heavy metal pieces being fed into the crusher.

REDUCTION in the cost of baling sheet steel scrap is claimed for a recently developed press which forms a bundle 16 x 16 inches. The unit includes a box, 6½ feet long, 16 inches wide and 6 feet 10 inches deep. Above the box is a primary compression ram and at one end of the box a 16 x 16-inch secondary compression ram. Two pullback plungers are provided on each side of the box. A compression chamber 16 x 16 inches cross section and 5 feet long, is located at the opposite end of the box. Once the box is charged and the door closed, the primary ram compresses the material into a rectangular bundle, 16 x 16 inches in cross section and 6½ feet long. The secondary ram moves the bundle into the compression chamber and presses it against a previously formed bale. When compressed the bundles move forward, the second occupying the position of the first bundle. In the meantime, the hinged door has been opened and the first compression ram elevated to its starting position. When the secondary ram arrives at its starting position the press is ready for another charge. Once the door operating lever is moved, all subsequent operations are effected automatically. Bales average 14½ inches long, weigh about 400 pounds, have a density of 36 per cent and can be compressed at the rate of 25 tons an hour.



COMPOSITION bearings installed in a finishing stand of a 21-inch continuous sheet bar and skelp mill where the roll neck speed is 468 feet a minute, show wear in the shell of only 1/16-inch after a rolling campaign of 6800 tons. The thrust collars made from composition material, however, were worn out and required replacement.

♦ ♦ ♦

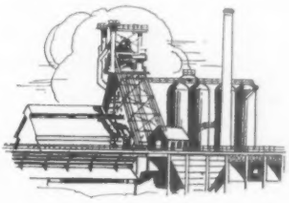
Corrosion may be controlled and scale and rust eliminated from hot water lines by the use of a recently developed chemical formula. The solution makes no coating on the piping but by combining directly with oxygen to form a stable compound thus removes this gas as a factor in corrosion. Carbon dioxide is absorbed on the surface of the colloid while scale forming particles are maintained as suspensoids. The solution combines with lime, is partially volatile and is well suited for boiler treatment.

♦ ♦ ♦

Silico-manganese containing 12 to 14 per cent silicon and 65 to 70 per cent manganese has replaced spiegeleisen and silicon pig in open-hearth practice at many plants in this country. The dual product is used for cleaning up the bath of open-hearth steel intended for sheets and strips of deep drawing quality.

♦ ♦ ♦

Steel strapping lithographed in bright colors with the name, address, trade mark, symbol, or instructions of the consumer to identify or eliminate lost packages, cases, bundles or crates and to assist in checking shipments, is a product recently originated by an eastern stripmaker.



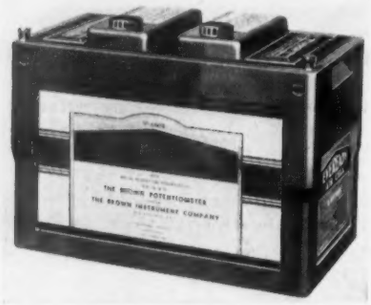
REMOVAL of obnoxious gases from blast furnace dust catchers, water sealed valves, gas washers and gas mains when repairs or a cleanout are required, can be accomplished by a recently marketed blower. The unit, mounted on heavy coil springs to cushion the vibration, delivers 1550 cubic feet of air per minute through 8-inch diameter flexible tubing.

NEW EQUIPMENT

PRODUCTION FABRICATION TREATMENT FINISHING

Offers Compensated Air Cell For Potentiometers

Brown Instrument Co., 4494 Wayne avenue, Philadelphia, has developed a new type of battery, shown herewith, which enables the Brown potentiometer to record or control temperatures accurately without the necessity of frequent standardizing. This new battery,



New compensated air cell for Brown potentiometers

known as the compensated air cell, is a wet type nonrechargeable battery, which is shipped dry and rendered active by adding cool drinking water. It derives its name from the principle of air polarization, the oxygen being obtained from the air rather than from compounds within the battery. In addition to having a large ampere-hour capacity, the air cell is equipped with a built-in coil which automatically compensates for changes in the temperature surrounding the battery. Therefore, regardless of temperature changes, the air cell has a constant current output.

◆

Fuse Clips Now Available In Carton Quantities

Square D Co., 6060 Rivard avenue, Detroit, recently placed on the market in carton quantities a positive pressure fuse clip. The clip itself is made of pure copper, which results in high electrical conductivity. A reinforcing steel spring, which is rustless, insures long contact life and positive automatic gripping of the fuse without auxiliary parts. In the 30 and 60-ampere size clips the spring is imbedded in the copper clip so that it cannot work loose. On larger size jaws the reinforcing member is held securely by the mounting bolt of the jaw.

◆

Weighing Device Handles Small Metal Products

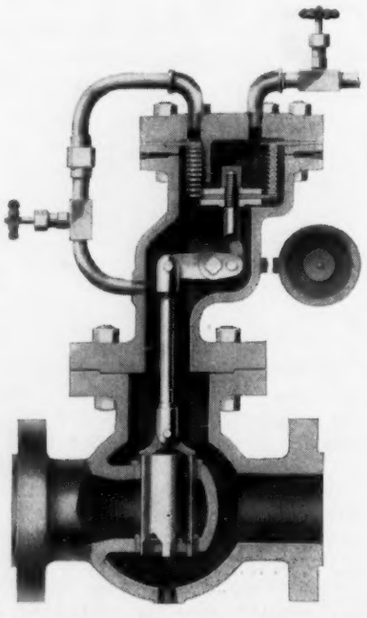
Toledo Scale Co., Toledo, O., is marketing an improved weighing and automatic filling device developed by Toledo Precision Devices Inc. The unit will weight as high as one thousand one-pound packages an hour to an accuracy of one-sixteenth ounce. Manufacturers of a wide variety of small metal products such as nails, clips and pins will be particularly interested in this development.

◆

Improves Differential Pressure Control Valve

Northern Equipment Co., Erie, Pa., recently designed a new differential pressure control valve, designated the Copes type SS-2. Improvements in the internal construction of the unit, shown in the accompanying illustration, permit throttling of higher pressure drops than did the previous design. Three-fourth to 6-inch sizes are available in the 250,-400 and 600-pound pressure standards.

Range of control is 10 to 35 pounds per square inch differential pressure. The valve will handle pressure drops up to 150 pounds, depending on the size.



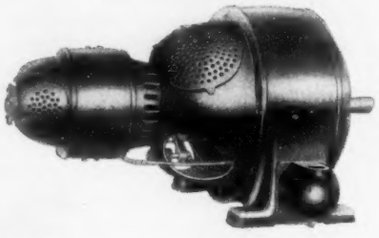
Copes type SS-2 differential pressure control valve

◆

Alternating-Current Generator Is Compact Unit

Marble-Card Electric Co., Gladstone, Mich., has announced a new line of alternating-current generators, ranging from .6 to 75 kilovolt-amperes capacity. The generators, are of the separately excited type and have the direct-current exciter bolted directly to the main generator frame as shown in the accompanying illustration.

Two ball bearings are used to support the exciter shaft and two for the main generator shaft, the two shafts being coupled together by flexible coupling. Three-phase, three-wire and four-wire machines, as well as single-phase, two and three-wire types, are built in all standard sizes up to 75 kilovolt-amperes, 3 phase, and up to 50 kilovolt-amperes, single-phase.



A-C generator developed by Marble-Card Electric Co.

◆

Two New Electrodes Are Added to Line

Metal & Thermit Corp., 120 Broadway, New York, has announced two additions to its line of heavy mineral coated welding electrodes. One is a special electrode designed for welding Cromansil Steel, and gives a deposit of the same analysis. The weld metal is said to possess physical properties which are equal to the parent metal in every respect. The second addition is an electrode which deposits a metal containing 4 to 6 per cent chrome and 0.5 per cent molybdenum.

Steel Rate Off 2 Points; Outlook Still Strong

Conservatism More Apparent Pending Code Developments—Specifications Driven in by Deadline on Preferential Agreements—Prices Being Extended

STEELWORKS operations have eased off 2 points to 55 per cent, the first break since the upturn started last March, as producers become more conservative pending clarification of the government program, and consumers withhold fresh commitments until their own situation and that of the price structure become better defined.

Intrinsically, the production outlook remains strong, steelmakers having sufficient specifications to carry them through much of August at the present rate. Part of these specifications originated with large buyers last week, when the July 31 deadline on preferential prices drove in considerable tonnage. Not for three to four weeks will the present dearth of new buying be felt seriously; in the meantime the recovery program will have become more clearly developed.

Conservatism on the part of leading steelmakers has been prompted by the fact that the industry is rapidly nearing an era of controlled prices, to become effective with acceptance of its industrial code. It is nearer a single-price basis for large and small consumers than ever before—an experimental venture.

So far as the immediate market is concerned, two developments are outstanding: First, the almost complete abolition of preferential prices; second, the extension of current single prices for the remainder of the third quarter. However, these prices are not guaranteed for the full quarter.

Some difficulties in the proposed new price set-up under the code remain to be adjusted. For example, Chicago independents are reported favoring dropping the $2 differential over Pittsburgh, to take advantage of their position for the Detroit market. Basic pig iron is to be sold at the basic price only when it is to be used in open hearths; when in the foundry cupola it is to take the higher foundry iron price. In the meantime, various prices continue to be raised; railroad tie plates are up $3 a ton; cold-finished steel bars are to be advanced $5 a ton.

One of the strongest promises for a fall upturn is the continuing active demand for raw materials. July generally is the year's low in pig iron shipments, but the month marks the high spot so far this year, 30 to 50 per cent over June with a further gain indicated for August. Four more furnaces have resumed; large coke inquiries have appeared. Lake Superior iron ore shipments for July, estimated 3,500,000 tons, approximate the total for all of 1932.

Structural shape awards for the week rose to 24,575 tons, including 18,000 tons for Boulder Dam-Los Angeles transmission towers. Reinforcing bar tonnage also increased substantially, with the placing of 8700 tons for the San Francisco-Oakland bridge substructure. Approval by the war department has assured 15,000 tons of steel for Grand Island bridges at Buffalo.

Cleveland is taking bids on 35,600 tons of cast and steel pipe; 5000 tons of plates are being negotiated for the Pasadena Pine Canyon pipe line. Pan American Petroleum & Transport Co., has distributed 3500 tons of steel pipe.

Railroads generally are manifesting more interest in maintenance requirements, and steelmakers are basing hopes for larger purchases shortly on the strength of improved earnings. Several western roads are preparing to make substantial rail purchases; 7000 tons of rails are reported released to Carnegie Steel Co. Missouri Pacific has placed 1,500,000 tie plates.

Steelworks operations last week declined 10 points to 80 per cent in the Wheeling district; 2 to 49 per cent at Pittsburgh; 2 to 58 per cent at Chicago. They advanced 4 points to 90 per cent in New England; 1 to 63 at Buffalo; remaining unchanged in other districts.

STEEL's iron and steel composite remains $30.02; the finished steel at $47.40, while the scrap composite is up 37 cents to $11.62.

Composite Market Averages

	July 29	July 22	One Month Ago June, 1933	Three Months Ago April, 1933	One Year Ago July, 1932	Ten Years Ago July, 1923
Iron and Steel Composite	$30.02	$30.02	$28.73	$28.16	$29.47	$45.39
Finished Steel Composite	47.40	47.40	45.30	44.94	47.71	68.33
Steelworks Scrap Composite	11.62	11.25	9.55	7.23	6.06	16.45

Iron and Steel Composite:—Pig iron, billets, slabs, sheet bars, wire rods, tin plate, nails, sheets, plates, shapes, bars, and black pipe. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate pipe. Steelworks Scrap Composite:—Melting steel, compressed sheets.

COMPARATIVE PRICES OF IRON, STEEL AND COKE

Representative Market Figures for Current Week, Last Month, Three Months and One Year Ago

	July 29, 1933	June 1933	April 1933	July 1932
Pig Iron				
Bessemer, del. Pittsburgh	18.26	17.26	16.26	15.76
Basic, valley	16.00	15.00	14.00	14.00
Basic, eastern, del. eastern Pa.	17.19	16.19	14.19	14.25
No. 2 foundry, del. Pittsburgh	17.76	16.70	15.76	15.76
No. 2 foundry, Chicago	17.00	16.00	15.50	15.50
*Southern No. 2, Birmingham	13.00	12.00	11.40	11.00
**No. 2X Virginia furnace	18.75	17.75	17.75	18.00
**No. 2X, Eastern, del. Phila.	17.63	16.76	14.51	14.76
Malleable, valley	16.50	15.50	14.50	14.50
Malleable, Chicago	17.00	16.00	15.50	15.50
Lake Superior charcoal, del. Chi.	23.04	23.04	23.04	23.04
Gray forge, del. Pittsburgh	17.13	16.63	15.63	15.63
Ferromanganese, del. Pittsburgh	87.24	73.24	73.24	73.24

*1.75-2.25 silicon. **2.25-2.75 silicon.

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c per gross ton, beginning Jan. 4, 1932.

Coke				
Connellsville, furnace, ovens	2.75	1.80	1.75	2.00
Connellsville, foundry, ovens	3.00	2.40	2.25	3.00
Semifinished Material				
Sheet bars, open-hearth, Youngs.	26.00	26.00	26.00	26.00
Sheet bars, open-hearth, Pitts.	26.00	26.00	26.00	26.00
Billets, open-hearth, Pittsburgh	26.00	26.00	26.00	26.00
Wire rods, Pittsburgh	35.00	35.00	35.00	37.00

	July 29, 1933	June 1933	April 1933	July 1932
Finished Material				
Steel bars, Pittsburgh	1.60	1.60	1.60	1.60
Steel bars, Chicago	1.70	1.70	1.70	1.70
Steel bars, Philadelphia	1.91	1.91	1.91	1.91
Iron bars, Chicago	1.65	1.65	1.65	1.65
Shapes, Pittsburgh	1.60	1.60	1.60	1.60
Shapes, Philadelphia	1.65	1.65	1.65	1.75
Shapes, Chicago	1.70	1.70	1.70	1.70
Tank plates, Pittsburgh	1.60	1.55	1.55	1.60
Tank plates, Philadelphia	1.54½	1.49½	1.49½	1.79½
Tank plates, Chicago	1.70	1.70	1.70	1.70
Sheets, No. 10 blue anneal., Pitts.	1.65	1.65	1.55	1.70
Sheets, No. 24, hot ann., Pitts.	2.25	2.10	2.00	2.20
Sheets, No. 24, galvan., Pitts.	2.85	2.70	2.65	2.85
Sheets, No. 10 blue anneal., Chi.	1.95	1.80	1.70	1.85
Sheets, No. 24 hot ann., Chicago	2.40	2.25	2.15	2.35
Sheets, No. 24 galvan., Chicago	3.00	2.85	2.80	3.00
Plain wire, Pittsburgh	2.10	2.10	2.10	2.20
Wire nails, Pittsburgh	2.10	1.85	1.85	1.95
Tin plate, per base box, Pitts.	4.25	4.25	4.25	4.75
Scrap				
Heavy melting steel, Pitts.	$13.75	11.65	9.90	8.35
Heavy melting steel, eastern Pa.	12.00	9.50	6.90	6.25
Heavy melting steel, Chicago	10.75	8.80	6.55	4.50
No. 1 wrought, eastern Pa.	13.00	10.25	7.35	6.25
No. 1 wrought, Chicago	10.35	8.10	5.50	4.60
Rails for rolling, Chicago	11.25	10.25	8.50	6.60

Sheets

Specifications Supporting Heavy Operations Through August—New Orders Fairly Active

SHEET PRICES, PAGE 41

Pittsburgh — Fewer orders for sheets appeared in the market last week, but some large tonnages, around 1000 tons, were placed. This was notable for the fact they covered sizes ordered by the same buyers just a few weeks ago. Several consumers in demanding quick delivery waived the ordinary discussion on price and placed No. 10 hot rolled at the full base of 1.65c, Pittsburgh. Galvanized sheets at 2.85c have been in larger demand, and black sheets are moving well at the new price of 2.25c, Pittsburgh. Automobile makers are not pressing so strongly for delivery. Asking prices on autobody stock are 2.15c and 2.60c for No. 10 and No. 20 gage, respectively.

Cleveland — Price advances announced recently are not yet fully in effect. For example, No. 24 hot-rolled annealed sheets, scheduled for 2.25c, base, Pittsburgh, are being offered at 2.15c and 2.20c for the remainder of third quarter and No. 20 automotive sheets, quoted by some mills at 2.60c, are offered in other directions at 2.50c. Producers, however, say they will adhere strictly to the new prices when the industrial code is accepted. Mills here and in an adjacent lake district continue production near capacity and report specifications sufficient for their present rates to the close of August.

Chicago—Sheet producers are quoting current prices on business for delivery over the remainder of this quarter. New purchasing is fairly active and prices are holding well. Demand has shown no recession and shipments and backlogs are equally as good as several weeks ago. Automotive needs remain heavy, and August shipments are expected to show only a small decrease.

Boston—The bulk of sheets now being shipped are going directly into consumption. Large industrial consumers continue to take material on contracts, but new buying has eased off.

Philadelphia — Sheet buying is moderate, with prices generally unchanged on shipments for delivery up to the end of this quarter. No. 10 hot rolled are 1.65c, Pittsburgh; galvanized, 2.85c; and black, 2.25c, with the carload freight rate 35 cents from Pittsburgh. No. 10 mill-run cold rolled are fairly steady at 1.95c, Pittsburgh, and No. 20 at 2.40c, with the local delivered price 35 cents higher.

New York—On a blanket inquiry for the remainder of the year from a large consumer here sellers quoted only for shipment to the end of this quarter, with specifications to be released by Sept. 15. No exceptions are reported. Miscellaneous demand is moderate, with prices firm. A fairly sizable tonnage of cold-rolled sheets are required for 4000 oil burners to be made by General Electric Co.

Buffalo—Sheet mills here continue to operate at 70 per cent. Heavy specifications are reported.

Cincinnati — New demand for sheets has been active in this district despite the rush to cover last month which created a backlog rasing production to about 75 per cent. Steady buying at nearly normal volume by some of the smaller manufacturers is noted.

St. Louis—Consumers' requirements are well covered by recent specifications and the market is quieter. Demand for galvanized sheets, however, continues to improve moderately.

Birmingham, Ala.—All sheet mills in this district are operating. New business is fairly good.

CURRENT FINISHED STEEL PRICES

Delivered prices subject to freight surchage corrected to nearest ½c. Asterisk denotes price change this week

Sheet Steel

HOT ROLLED No. 10 (24 to 48 inches wide)

Pittsburgh, base	1.65c
Chi. dist. mills	1.75c
Chicago, del.	1.80c
New York, del.	2.00c
Birm., base	1.80c
Phila., del.	1.96c
St. Louis, del.	1.84c

HOT ROLLED ANN. No. 10

Pittsburgh, base	1.80c
Chi. dist. mills	1.90c
Chicago, del.	1.95c
Phila., del.	2.11c
New York, del.	2.15c
St. Louis, del.	1.99c
Birm., base	1.95c
San Fran., c.i.f.	2.27½c

HOT ROLLED ANNEALED No. 24

Pittsburgh, base	2.25c
Chi., dist. mills	2.35c
Chicago, del.	2.40c
New York, del.	2.60c
Phila., del.	2.56c
Birm., base	2.40c
St. Louis, del.	2.59c
San Fran., c.i.f.	2.90c

GALVANIZED No. 24

Pittsburgh, base	2.85c
Chi. dist. mills	2.95c
Chicago, del.	3.00c
Phila., del.	3.16c
New York, del.	3.20c
Birm., base	3.00c
St. Louis, del.	3.19c
San Fran., c.i.f.	3.50c

TIN MILL BLACK No. 28

Pittsburgh, base	2.50c
Gary, base	2.60c
St. Louis, del.	2.84c

MILL RUN COLD-ROLLED

No. 10

Pittsburgh, base	1.95c
Chicago, del.	2.10c
Philadelphia, del.	2.26c
New York, del.	2.30c

No. 20

Pittsburgh, base	2.40c
Chicago, del.	2.55c
Philadelphia, del.	2.71c
New York, del.	2.75c

AUTO. AND FURNITURE

Pittsburgh, No. 10	2.15c
Pittsburgh, No. 20	2.60c

ENAMELING SHEETS

Pitts., No. 10	2.40c to 2.45c
Pitts., No. 20	2.90c

Tin and Terne Plate

Per 100-lb. box, Pittsburgh

Tin plate, coke base, contract	$4.25
Do., stock	3.75
Long ternes, No. 24 unassorted	2.90c

Gary base, 10 cents higher.

Corrosion, Heat Resistant Alloys

Base, Pittsburgh

18% chrome, 8% nickel sheets, 35c; plates, 31c; bars, 28c.

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	21c	22.5c	25c	30c
Sheets	26c	27.5c	30c	35c
Hot Strip	19c	20.5c	23c	28c
Cold Strip	25c	26.5c	29c	34c

Carbon 0.12 and under; no nickel. A has chrome 15% and under. B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Steel Plates

Pittsburgh, base	1.60c
New York, del.	1.60c to 1.70c
Phila., del.	1.49½ to 1.59½
Boston, del.	1.72c to 1.82c
Buffalo, del.	1.85½c
Chicago, base	1.70c
Cleveland, del.	1.80½c
Birmingham, base	1.75c
†Coatesville, base	1.40c to 1.50c
Pacific Coast, c.i.f.	1.75c
St. Louis, del.	1.94c

†To Aug. 1; thereafter 1.70c.

Structural Shapes

Pittsburgh, base	1.60c
Philadelphia, del.	1.65c to 1.75c
New York, del.	1.77c to 1.87c
Boston, del.	1.90½c to 2.00½c
Chicago, base	1.70c
Cleveland, del.	1.80½c
Lackawan., base	1.70c
Birmingham, base	1.75c
Pacific Coast, c.i.f.	2.10c
Do., wide flange	2.20c

Bars

SOFT STEEL

Pittsburgh, base	1.60c
Chicago, base	1.70c
Birmingham, base	1.75c
Lackawan., base	1.70c
*Pacific Coast ports, c.i.f.	2.10c
Cleveland, base	1.65c
Philadelphia, del.	1.91c
New York, del.	1.95c
Boston, del.	2.02c
Pitts., cold finish	1.70c
Pitts., forg. qual.	1.75 and 1.85c

RAIL STEEL

Pitts., Buff.	1.50c
Chicago, base	1.50c
Eastern mills	1.50c

IRON

Chicago, base	1.60c to 1.70c
New York, del.	1.85c to 1.90c
Philadelphia, del.	1.81c to 1.86c
Pitts., refined	2.70c to 4.20c

REINFORCING

New billet steel, Chi., Pitts., Buff., Cleve., Birm. (cut lengths)	1.75c
Chicago, rail steel	1.50c
Phila., cut lengths	1.86c

Wire Products

(Prices apply on carload lots. Mixed carloads 10 cents higher; joint carloads up 20 cents; less carloads up 30 cents. Nail extras subject to 10 per cent discount on straight or mixed carload shiped to single consignee.)

F.o.b. mills, 100 lb. keg

Standard wire nails	$2.10
Cement coated nails	2.10
Galvanized nails	3.60

(Per pound)

Polished staples	2.80c
Galvanized fence staples	3.05c
Barbed wire, gal.	2.60c
Annealed fence wire	2.25c
Galvanized wire	2.60c
Woven wire fencing (base column, c.l.)	$55.00

(To Manufacturing Trade)

Plain wire, 6-9 ga	2.10c

Anderson, Ind., and Chicago, $1 over Pitts.-Cleve.; Duluth and Worcester, $2 higher; Fairfield, Ala., $3 higher.

Spring wire	3.10c

Chicago and Waukegan $1 higher, Worcester $2 higher.

Cold-Finished Bars

Base Pitts., one size, shape, grade, shipment at one time to one destination

10,000 to 19,999 lbs.	1.70c
20,000 to 59,999 lbs.	1.65c
60,000 to 99,999	1.60c
100,000 lbs. and over	1.57½c

Chicago, Cleveland, Buffalo 5c higher; Detroit, 20c; eastern Michigan 25c.

Shafting

Cumberland, Md., base

1⅛-inch	3.00c
1⅛ to 1½-inch	2.50c
1⅝ to 1⅞-inch	2.20c
2⅛ to 6-inch	2.05c

Alloy Steel

Hot rolled, f.o.b. Pittsburgh, Buffalo, Chicago and Massillon, O. Base 2.45c to 2.65c. Differentials to various classes of consumers.

S.A.E.	Alloy Diff.	S.A.E.	Alloy Diff.
2000	0.25	3100	0.55
2100	0.55	3200	1.35
2300	1.50	3300	3.30
2500	2.25	3400	3.20

4100 .15 to .25 Mo	0.50
4600 .20 to .30 Mo. 1.25-1.75 Ni.	1.05
5100 .80-1.10 Cr.	0.45
5100 Cr. spring	0.20
6100 bars	1.20
6100 spring	0.95
Cr., Ni., Van.	1.50
Carbon van.	0.95
9250 (flats)	0.25
9250 (rds., sq.)	0.50

Strip, Hoops, Bands

Hot-rolled strip up to 23 15/16-in. wide, Pitts.	1.60c to 1.65c
Do., Chicago	1.70c to 1.75c
Do., del. Phila.	2.01c to 2.06c
Do., del. N. Y.	2.05c to 2.10c
Cooperage hoop, Pittsburgh	1.75c
* Do., Chicago	1.85c
Cold-rolled strip Pitts., Cleve.	2.25c
Worcester, 3 tons or over	2.45c

Rails, Track Material

Stand. rails, mill	$40.00
Relaying rails, Pitts., 20-45 lbs.	$22.50 to 25.00
50 to 75	$19.00 to 21.00
80 to 100	$23.00 to 24.00
Light rails, 25-45, mills	$30.00
Light rails, Chi.	$32.00
Angle bars, mills	2.55c
Spikes, R. R. mills	2.40c
Spikes, boat, b'ge, Pitts.	2.65c
Track bolts, Chi.	3.50c
Do., stand. job.	73 off list
*Tie plates, Pitts.	$38.00
*Tie plates, Chi.	$38.00

Rivets, Wrought Washers

Struc. c.l., Pitts-Cleve.	2.50c
Struc., c.l., Chi.	2.60c
7/16-in. & smaller, Pitts., Chi., Cleve.	70, 10 and 5 off
Washers, c.l., Pitts. dist.	7.35 off
Do., Chi. dist.	7.00 to 6.75 off

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chi. Discounts to legitimate jobbing or large consuming trade for full-case lots, Dec. 1, 1932, lists.

CARRIAGE BOLTS

All sizes, cut thread	73 off
Rolled thread, ½ x 6 and smaller	73 off
Eagle list	73 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts	73 off
Tire bolts	60 off
Stove bolts, 72½-25-10 off in pkgs.; 85 off in bulk, 5000 or more of a size.	
Rolled thread machine bolts, ½ x 6 and smaller, 73 off.	

NUTS

Semifinished	73 off

HEXAGON CAP SCREWS

Milled	85 off
Upset 1-in. diam., smaller	85-10 off

SQUARE HEAD SET SCREWS

Upset, 1-in., smaller	80 off
Upset, larger than 1-in.	80 off
Headless set screws	75-10 off

Cut Nails, Piling

Cut nails, Pitts.; (10% discount on size extras)	$2.65
Do., less carloads, 5 kegs or more; no discount on size extras	$2.90
Do., less than 5 kegs; no discount on size extras	$3.05
Steel piling, Pitts.	1.90c

Pipe and Tubing

Base $200 net ton, except on standard commercial seamless boiler tubes under 2 inches and cold drawn seamless tubing.

Welded Iron, Steel Pipe

Base discounts on steel pipe, Pittsburgh and Lorain, O., to consumers in carloads, Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago delivered, 2½ points less. Wrought pipe, Pittsburgh base.

All discounts are net.

BUTT WELD

Steel

In.	Blk.	Gal.
¼ and ⅜	57	38½
½	62	50½
¾	65½	55½
1—3	67½	58½

Iron

½	31½	15
¾	36½	20½
1—1¼	39½	25½
2	41½	26

LAP WELD

Steel

2	63½	54½
2½—3	66½	57½
3½—6	68½	59½
7 and 8	67½	57½
9 and 10	67	57
11 and 12	66	56

Iron

2	37	22½
2½—3½	38	25
4—8	40	28½
9—12	38	24½

(*Please turn to next page*)

LINE PIPE

Steel

⅛-inch, butt weld	50½
¼—⅜, butt weld	56
½, butt weld	61
¾, butt weld	64½
1—3, butt weld	66½
2-inch, lap weld	62½
2½—3, lap weld	65½
3½—6, lap weld	67½
7—8, lap weld	66½
9—10, lap weld	66
11—12, lap weld	65

Iron

⅛—1½ inch, black and galv. take 4 pts. over; 2½—6 inch 2 pts. over discounts for same sizes, standard pipe list. 8—12 inch no extra. 2-inch line discount unchanged from list prior to April 15, 1933.

BOILER TUBES

C. L. Discounts, f.o.b., Pitts.

Lap Weld Steel		*Charcoal Iron*	
2—2¼	33	1¾	8
2½—2¾	40	2—2¼	13
3	47	2½—2¾	16
3¼—3¾	50	3	17
4	52	3¾—3½	18
4½—6	42	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Quantity discounts, same as for hot rolled below. Charcoal Iron—Under 10,000 pounds; 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES

Cold Drawn

2—2¼	27	3¼—3½	44
2½—2¾	34	4	46
3	41	4½, 5, 6	36

(On 1—1¾-inch sizes mechanical tubing discounts apply.)

Hot Rolled

2—2¼	33	3¼—3½	50
2½—2¾	40	4	52
3	47	4½, 5, 6	42

Quantity discounts are: Under 10,000 pounds, 10 points and 5 per cent; 10,000 to 24,999 pounds, 6 points and 5 per cent; 25,000 pounds to carload, 2 points and 5 and 5 per cent; carload and over, base discount and 5 and 5 per cent. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount.

Seamless Tubing

Cold drawn; f.o.b. mill disc.

100 ft. or 150 lbs	40%
15,000 ft. or 22,500 lbs	70%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

6-in. & over, Birm.	$35.00-36.00
4-in., Birm.	38.00-39.00
4-in. Chicago	46.40-47.40
6 to 24-in. Chicago	43.40-44.40
6-in. & over, N. Y.	32.00-34.50
4-in. New York	34.50-36.50

Class A pipe $3 over Class B. Stand. fitgs., Birm. base..$90.00

Six to 24-inch, fittings, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher.

RAW MATERIAL PRICES

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c gross ton, from Jan. 4, 1932, except Buffalo del. at Boston. Asterisk denotes price change.

Pig Iron

Per Gross Ton

FOUNDRY NO. 2

Chicago, furnace	$17.00
Pitts., dist. fur.	17.00
Pittsburgh, del.	17.63-18.13
Valley furnace	16.50
Cleve. fur., loc. del.	16.50
Philadelphia, del.	17.26
Virginia furnace	17.25
Granite City, Ill.	17.00
St. Louis, del.	17.85
Buff., fur., local del.	17.00
Buff., all-rail. Bost.	20.05
Buff., del. Brook.	18.77
Buff., del. Newark.	17.89
Ala., Birmingham.	13.00
Ala., del. Chicago.	17.16
Ala., del. St. Louis.	17.35
Ala., del. Cincinnati	17.51
Ala., Phila., dock	18.00-18.25
Ala., Balt., dock del.	18.00
Ala., N. Y. dock	18.50
Ala., Bost. dock del.	18.50-18.75
Tenn., Bir. base	14.00
Tenn., del. Cinci.	17.51
Montreal, del	22.00
Eastern, del. Phila.	17.76

FOUNDRY NO. 2X

Buff., fur., local del.	17.50
Buff., del. Brook.	19.02-19.27
Do., Newark	18.14-18.39
Buff., all-rail, Bost.	20.55
Virginia furnace	17.75
Eastern, del. Phila.	17.51-17.76

FOUNDRY NO. 1X

Buff., fur., local del.	18.00
Eastern, del. Phila.	18.01-18.26
Buff., del. Brook.	19.52-19.77
Buff., del. Newark.	18.64-18.89

MALLEABLE

Valley furnace	16.50
Cleve. fur., loc. del.	16.50
Pittsburgh dis. fur.	17.00
Pittsburgh, del.	17.63-18.13
Chicago, furnace	17.00
Buff., fur., loc. del.	17.50
Eastern Pa., del.	18.13-19.91
Granite City, fur.	17.50
Montreal del.	22.50
Toronto, delivered	21.00

BASIC

Pitts., dist. fur.	16.50
Pittsburgh, del.	17.13-17.63
Eastern Pa., del.	17.00-17.25
Buff., fur., loc. del.	16.50-17.00
Montreal, del.	22.00
Valley, furnace	16.00

BESSEMER

Valley furnace	17.00
Pittsburgh fur.	17.50
Pittsburgh, del.	18.13-18.63

LOW PHOS.

Valley fur. stand.	25.00
*Phila., standard	25.76-26.79
*Copper, bear., E. Pa. furnace	24.00-25.00

GRAY FORGE

Valley furnace	16.25
Pitts., dist. fur.	16.50
Pittsburgh, del.	17.13-17.63

CHARCOAL

Lake Sup., del. Chi.	23.04

SILVERY

Jackson County, O., or Pittsburgh furnace; 6%—$20; 7—$20.50; 8—$21.00; 9—$21.50; 10—$22; 11—$23.

BESSEMER FERROSILICON

Jackson County, O., or Pittsburgh furnace: 10%—$23; 11—$23.50; 12—$24.00; 13—$24.50; 14—$25.00; 15—$25.50; 16—$26.00.

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½%, Lower Lake Ports

Old range bess.	$4.30
Mesabi bessemer	4.65
Old range nonbess.	4.65
Mesabi nonbess.	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents, unit, del. E. Pa.

Foundry and basic, 56-63%, con.(nom.)	8.00- 9.00
Cop-free low phos. 58-65% (nom.)	10.00-10.50

FOREIGN ORE

Cents per unit, f.a.s. Atlantic ports (nom.)

Foreign manganiferous ore, 45-55% iron, 6-10% man.	8.50
No. Afr. low phos.	7.00
Swedish basic, 65%	8.00
Swedish lo wphos.	8.50
Spanish, No. Afr. basic, 50 to 60%.	7.00
*Tungsten, spot, sh. ton unit, duty pd.	$12.00-12.50
N. F. fdy., 55%	7.00
*Chrome ore, 48% gross ton c.i.f.	$17.00-18.00

Manganese Ore

(*Nominal*)

Prices, not including duty, cents per unit, cargo lots.

Caucasian, 52-55%	20.00
So. African, 52%	20.00
So. Afr., 49-51%	18.00-19.00
Indian, 48-50%	nominal

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pa., Ohio, Ill., Ky., Md., Ga., Mo.	$40.00
Alabama	43.00

Second Quality

Pa., Ohio, Ill., Ky., Md.	35.00
Missouri	35.00
Georgia, Alabama.	35.00

MALLEABLE BUNG BRICK

All bases	45.00

SILICA BRICK

Pennsylvania	$40.00
Joliet, E. Chicago	49.00
Birmingham, Ala.	50.00

MAGNESITE BRICK

Per Net Ton, 9 x 4½ x 2½

Burned	$65.00
Unburned	55.00

CHROME BRICK

Per Net Ton

F.o.b. ship. point	$45.00

MAGNESITE

Dead burned grain, Chester, Pa., Baltimore bases, net	40.00
Domes, Chewelah, Wash., base	22.00

Fluorspar

85 to 5 per cent grade

Washed gravel, duty paid, tide, gross ton	$20.00
Washed gravel f.o.b. Ill., Ky., net ton, carloads	$14.00

Semifinished Steel

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pitts., Chi., Cleve., open-hth. & bess, Philadelphia	$26.00 31.75
Forging, Pitts., Chi.	31.00

SHEET BARS

Pitts., Cleve., Yong.	26.00
Chicago	26.00

SLABS

Pitts., Cleve., Yong.	26.00

WIRE RODS

Pitts., Cleveland	$35.00
Chicago	36.00

SKELP

All grades, Pitts.	1.60c

Coke

Price Per Net Ton

BEEHIVE OVENS

*Connellsville fur.	$2.75- 3.25
Connellsville fdry.	3.00- 3.50
*Connell. prem. fdry.	4.00
New River fdry.	6.00
Wise county fdry.	4.25- 5.00
Wise county fur.	3.50- 4.25

BY-PRODUCT FOUNDRY

Newark, N. J., del.	8.21- 8.81
Chi. ov., outside del,	7.50
Chicago, del.	8.25
New England, del.	10.00
St. Louis, del.	7.75
Birmingham, ovens	4.00
Indianapolis, del.	8.25
Ashland, Ky., ovens, Connell., basis	5.00
Portsmouth, ovens, Connel. basis	5.00
Buffalo, ovens	7.50- 8.00
Detroit, ovens	8.00
Philadelphia, del.	8.50

Ferroalloys

(*In dollars, except Ferrochrome*)

Ferromanganese, 78-82% tidewater, duty pd.	82.00
del. Pitts.	87.24
Spiegeleisen, 19-20%, dom., fur., spot†	27.00
Ferrosilicon, 50%, frieght all., c. l.	74.50
Do, less carload	82.50
Do, 75 per cent. Spot, $5 a ton higher.	120-130.00
Silicomang., 2½ carb.	85.00
2% carbon	90.00
1% carbon	100.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb. con. del.	9.50
Do, spot del.	10.00
*Ferrotungsten, stand., lb. cont.	1.04 -1.10
Ferrovanadium, 35 to 40%, lb. cont., on analysis	2.60- 2.80
Ferrotitanium, c.l., prod. plant, frt. allow., net ton	137.50
Spot, 1 ton, frt., all., lb.	8.50
Do, under 1 ton	9.00
*Ferrophosphorus, per ton, c. l. 17-19%, Rockdale, Tenn., basis; 18%, $2 unitage	42.00
*Ferrophosphorus, electrolytic, per ton c. l., 23-26% f.o.b. Anniston, Ala., 24% $2.50 unitage	55.00
Ferromolybdenum, stand. 50-60%, lb	0.95
Molybdate, lb. cont.	0.80

†Carloads. Diff. to apply to quantity.

Bars

Demand Well Maintained and Consumption Holds Strongly—Price Adjustments Near

BAR PRICES, PAGE 41

Pittsburgh—Pittsburgh producers of bars have decided upon a base price of 1.60c, Pittsburgh, to be filed under the steel code's provisions. However, this decision is not definite until a determination of the Chicago base is made. Whether the Chicago base at the usual $2 a ton over Pittsburgh will be maintained was an open question late last week. Abolishment under the steel code of a Detroit base on hot-rolled bars, and an eastern Michigan base as well for cold-drawn bars, places Pittsburgh bar mills in a more favorable position. Bar users have not bought appreciably into the future.

Cleveland—Large consumers of commercial steel bars placed substantial orders during the week, convinced preferential prices below 1.65c, base, Cleveland, will terminate July 31. Less is expected from them for several weeks. Small consumers, who had no special incentive in coming into the market, will continue to cover short-range requirements at 1.65c. Some leading consumers issued inquiries and were quoted 1.65c for August and September. Cold-rolled bars are expected to be raised $5 a ton to 1.95c, base, Pittsburgh. An Ohio implement manufacturer is in the market for 200 tons of soft steel bars. Automotive specifications have declined, as much as 40 per cent in one instance.

Chicago—Steel bar demand has been well maintained, improving slightly in some directions with business generally steadier than anticipated. Sales and specifications recently checked the decline apparent earlier in the month and the outlook for August is favorable. Automotive needs next month are indicated as being only moderately below those of July and above previous expectations. Farm implement building is slow to increase and orders from railroads are light but expanding gradually.

New York—Commercial steel bar specifications reflect firming of 1.60c, Pittsburgh.

Philadelphia — Specifications for commercial steel bars are more active than a week ago; in fact, on a relative basis, the improvement is more pronounced than in plates and shapes. This appears to mitigate the importance attached to the impending strength in these products as a force for driving in tonnage. One seller has recently advanced the price of common iron bars from 1.50c to 1.60c f.o.b. mill, a reflection of a substantial increase in labor rates.

Cold-Finished Bars May Be Advanced $5 Per Ton

Cold Finished Prices, Page 41

Pittsburgh — Contingent on announcement of 1.60c, Pittsburgh, on hot-rolled bars, cold-drawn bar producers will name a base of 1.95c, Pittsburgh. This will represent an advance of $5 a ton over the present market of 1.70c, Pittsburgh, and widens the spread between hot and cold bars from $4 a ton to $7. The cold-drawn bar finishers' hot-rolled price previously had been 1.50c, Pittsburgh, or the usual $2 a ton granted to former preferred buyers. Although some automobile and parts-makers are covered well ahead on cold-drawn bars, some are purchasing material only for manufacturing schedules already made up. July brought fewer orders but greater shipments, compared with June.

Tin Plate Production And Prices Holding

Tin Plate Prices, Page 41

Pittsburgh—The tin plate industry in the Pittsburgh district still is producing at 95 to 100 per cent. None of the mills here, upon government suggestion, is operating more than 16 turns. Prices are more or less definitely scheduled to continue at $4.25, per base box, into late fall. Some producers appear a little more willing to enter the black plate market, and the price is firm at 2.50c, Pittsburgh. The tin and terne plate Sabraton works, Morgantown, W. Va., of the American Sheet & Tin Plate Co., resumed operations last week after two years idleness.

Plates

Award of Five Barges Helps Plate Market—Navy Ships To Require Much Heavy Steel

PLATE PRICES, PAGE 41

Pittsburgh—Award of five cargo box barges requiring 800 tons of plates to the American Bridge Co., Pittsburgh, by McCrady-Rodgers Co., Pittsburgh contractor, was made last week and follows announcement the same interest will build three more barges, regaining 460 tons, for a district coal company. A few oil barge inquiries appear promising and may be closed soon. Tank builders report practically no inquiries or awards. Several railroads have been buying more light plates to repair cars and lighter gages of plates are moving well on fabricators' orders for beer tanks and barrels. Pittsburgh mills have decided on 1.60c, Pittsburgh, to file under the steel code. The Chicago base has as yet not been settled and, therefore, ties up the announcement of the price at any basing point. Bids will be asked soon on three mooring barges by United States engineers at Vicksburg, Miss.

Cleveland — Specifications from some of the large consumers enjoying preferential prices were heavier during the week, in anticipation of a firm minimum of 1.60c, base, Pittsburgh, on all new business after July 31. The Cleveland plate mills increased operations slightly. Cleveland is taking bids Aug. 3 for 36 miles of watermains, 24 to 48 inches diameter, requiring 2600 tons of plates, and 32,000 tons of cast iron pipe. Several hundred tons were placed here during the week for brewery tanks.

Chicago — Plate fabricators are fairly active on old work with new business principally on small lots. Oil companies have few construction or improvement programs in early prospect, while the outlook for increased plate requirements by railroads for new equipment continue indefinite. Orders from railroads for car repair work are slightly heavier. A fair volume of tank work for breweries still is pending.

Philadelphia—Plate tonnage has expanded, with 1.70c, Coatesville, Pa., designated as the going market, effective Aug. 1. Recent closing of third quarter contracts at old prices were confined to a few isolated cases according to trade interests here. Heavy plate tonnage is expected to

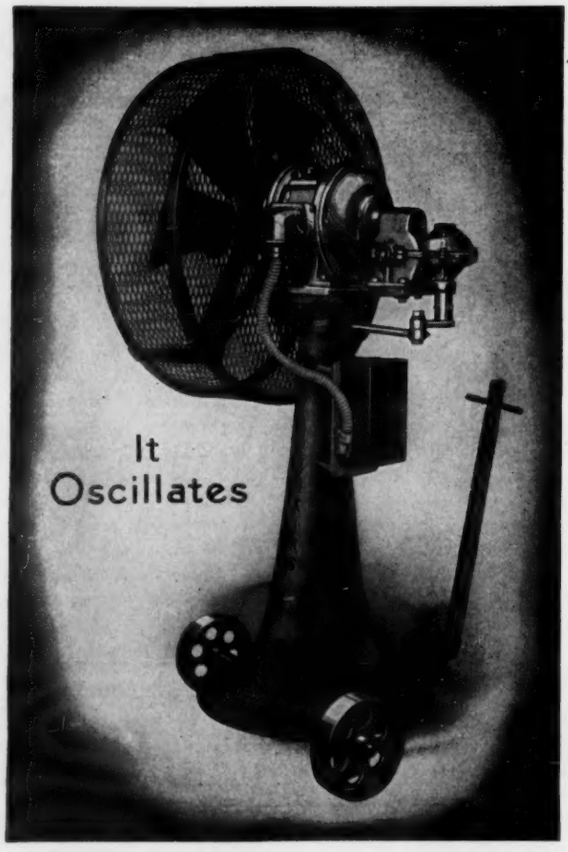
be released shortly for the 21 navy ships on which bids were opened July 26. Tonnage for the two largest vessels, the airplane carriers, is expected to be released first, possibly within 10 days, with that for the destroyers last, because of certain apparent complications in bidding.

Boston—Plate buying has been active, as 1.70c Coatesville, Pa., becomes effective this week. This price will be firm to all buyers and represents an advance of $6 a ton over considerable recent tonnages. Miscellaneous demand is holding well and some larger consumers have specified more heavily.

New York—Depreciation of the dollar abroad has resulted in some improvement in foreign demand, with the latest order 100 tons of plates for Cuba. A firm price of 1.70c, Coatesville, Pa., is indicated for application Aug. 1, forcing in substantial specifications. Mills generally are accepting these for delivery not later than Aug. 15. In addition to about 1200 tons of plates, shapes and bars for two submarines the Portsmouth, N. H., navy yard will ask bids shortly on tonnage for 14 remaining ships to be constructed by navy yards. Navy vessels pending will take substantial quantities of stainless steel. Babcock & Wilcox Co. will fabricate a penstock and tanks for the Union Carbide & Carbon Co. for its plant at Alloy, W. Va., 1600 tons of plates required being furnished by Carnegie Steel Co.

St. Louis—A St. Louis brewery during the week placed an order for 200 tanks, requiring 500 to 600 tons of plates.

PERKINS Man Coolers
Reduce Operating Costs



Oscillating and Stationary Types—Hundreds of users of Perkins Man Coolers have proven for themselves the wisdom of investment in Perkins Man Coolers.
Readily moved from place to place, they bring comfort to men working in hot places, resulting in decreased labor turnover, increased production and fewer accidents.

B. F. Perkins & Son, Inc.
Engineers and Manufacturers
HOLYOKE, MASS.

Contracts Placed

1790 tons, tunnel lining for metropolitan water district, Los Angeles, to Commercial Shearing & Stamping Co., Youngstown, O.

1600 tons, for penstock and tanks, Union Carbide & Carbon Co., at Alloy, W. Va., to Carnegie Steel Co. Fabrication by Babcock & Wilcox Co., New York.

1270 tons, penstock, New Kanawha Power Co., Gauley Junction, W. Va., to Babcock & Wilcox Co., New York.

800 tons, five cargo box barges for McCrady-Rodgers Co., Pittsburgh, to American Bridge Co., Pittsburgh.

600 tons, tanks for Hyde Park Brewery, St. Louis, to St. Louis Structural Steel Co., East St. Louis, Ill.

370 tons, three oil tanks, Texas Co., Wilmington, N. C., to McClintic-Marshall Corp., Bethlehem, Pa.

210 tons, three tanks, American Commercial Alcohol Co., Philadelphia, to Chicago Bridge & Iron Works, Chicago.

120 tons, oil barge, H. A. Merrill Co., to Gulf Port Boiler & Welding Works, Port Arthur, Tex.

Contracts Pending

4200 to 5100 tons, Pine Canyon Dam pipe line, Pasadena, Cailf.; bids Aug. 15.

1400 tons, 4 to 18-inch welded pipe, Alderwood Manor, Wash.; J. Coluccio, Seattle, low on general contract.

1215 tons, bureau of supplies and accounts, navy, Washington; bids Aug. 8 on 1174 tons, Portsmouth, N. H., and Aug. 15 on 41 tons hull plate steel, Brooklyn, N. Y.

100 tons, 24 buoys, lighthouse bureau, Staten Island, N. Y.; bids July 10.

July Ore Shipments Nearly Equal to All of 1932

Iron Ore Prices, Page 42

Cleveland—Lake iron ore shipments for July are estimated by the Lake Superior Iron Ore association at 3,500,000 tons. This closely approaches the 3,550,000 tons total for all of 1932. June shipments were 1,280,000 tons. Up to Aug. 1 this year the aggregate is approximately 5,764,000 tons.

The Wm. M. Parkin Company

Chemical Engineers to the Steel Industry

Announce

Another great improvement in their famous INHIBITORS.

"NEPOWDER"

100% Pure

The only INHIBITOR available for the Steel Industry, Undiluted

. . . . A new high standard in real quality and value

. . . . A triumph of modern skill in chemistry.

Soluble 100% in cold H_2SO_4 and HCL

• • •

ONE (1) Pound NEPOWDER *"100"* will Inhibit 2000 pounds of Sulphuric Acid. For efficient cleaning—Wire, Sheets, Strip, Rods, Tin Plate Sheets at any Temperature or Acidity. Low Metal Loss per Ton. Shipped in 50 lb., 100 lb. and 200 lb. drums. We will ship 50 gals. of H_2SO_4 with 50 lbs. of Nepowder in solution. Each gallon will inhibit 2000 lbs. of Acid.

"STOP • STUDY • STANDARDIZE • SUCCEED"

The Wm. M. Parkin Company

20 years success in NEP
60 years in Steel in Pittsburgh

PITTSBURGH, PA.

Chemical Engineers to the Steel Industry

Structural Shapes

Eighteen Thousand Tons Awarded for Boulder Dam Transmission Towers—13,500 Tons for Grand Island, Buffalo Bridges Assured—Eastern Market Stronger

STRUCTURAL SHAPE PRICES, PAGE 41

Pittsburgh—A contract for transmission towers for erection between Boulder Dam, Nev., and Los Angeles, requiring 18,000 tons of light galvanized angles and channels, has been awarded to Tower Builders Inc., a company recently organized by interests associated with Blaw-Knox Co., Blawnox, Pa., Consolidated Steel Corp., and Western Pipe & Steel Co., Los Angeles. The material is expected to be placed shortly with a subsidiary of the United States Steel Corp., but rolling probably will be scheduled on the Pacific coast. Structural releases still are fairly heavy. Plain structural material still is quoted 1.60c base, Pittsburgh. Wide flange material is carrying the usual $2 a ton extra.

Cleveland—Several hundred tons of structural shapes were awarded here during the week covering small projects, the number of which is increasing. Largest of active pending jobs are harbor improvements at Toledo, O., requiring 700 tons of sheet piling, and Ohio bridges, bid July 28, taking 350 tons of shapes. Cleveland grade elimination work now being planned calls for expenditure of $10,000,000, one-fifth of which will be for steel.

Chicago—Except for 3200 tons of bridge work for Illinois on which bids close July 31, the structural market in this district is devoid of large lots. Inquiries for small tonnages for private construction show occasional gains, but the outlook for any material increase in activity depends largely upon the rapidity with which the public works program gets under way.

Boston — Structural demand is light, but a few more jobs taking small tonnages are pending. Inquiries include 300 tons for a grade crossing for the Boston & Maine railroad at Everett, Mass. Plain material now is 1.70c, eastern mill.

Philadelphia—Elimination of Pencoyd, Pa., as a basing point on shapes, will become generally effective Aug. 1. As previously stated, this will mean an increase of 6.60c per 100 pounds in the delivered price here, in addition to the $2 advance that goes into effect the same day at the single remaining eastern basing point, Bethlehem, Pa. Building construction is light.

New York—Structural steel demand continues to lag. Firmer plain material prices and pending higher shop costs fail to be reflected in quotations submitted by fabricators. Shops where higher costs now are operative are being underbid. Plain material now is 1.70c, eastern mill, but untested on tonnage.

Buffalo—The war department has approved plans for the Grand Island bridges here, thus insuring construction, which will require 13,500 tons of shapes and 1500 tons of reinforcing bars.

Contracts Placed

18,000 tons, light galvanized angles and channels, transmission towers, from Boulder Dam, Nev., to Los Angeles, to Tower Builders Inc., a company recently formed by interests associated with Blaw-Knox Co., Blawnox, Pa., Consolidated Steel Corp., Los Angeles, and Western Pipe & Steel Co.

780 tons, Delaware, Lackawanna & Western railroad grade crossing elimination work, Cheektowaga, N. Y., to American Bridge Co., Pittsburgh.

710 tons, tunnel lining, metropolitan water district, Los Angeles; 500 tons to McClintic-Marshall Corp., Los Angeles; 210 tons to Commercial Shearing & Stamping Co., Los Angeles.

700 tons, police headquarters, Buffalo, to R. S. McMannus Steel Construction Co., Buffalo.

540 tons, building, National Electric Products Co., Bayway, N. J., to Savary-Glaeser Co.; Harris Structural Steel Co., Plainfield, N. J., to fabricate.

525 tons, hospital buildings, Orangeburg, N. Y., to Bethlehem Fabricators Inc., Bethlehem, Pa.

500 tons, addition to Bullock's Store, Hill street, Los Angeles, to Consolidated Steel Corp., Los Angeles.

445 tons, for bureau of supplies and accounts, navy, Washington; divided among Jones & Laughlin Steel Corp., Pittsburgh; Joseph P. Cattie & Bros., Philadelphia; and Pacific Coast Steel Corp., San Francisco; bids July 5.

425 tons, state school buildings, Wassaic, N. Y., to F. L. Heughes Co., Rochester, N. Y.; W. E. Wark Co., Philadelphia, general contractor. Reported last week as going to an unstated fabricator.

350 tons, state bridges, Osage and Woodward counties, Oklahoma, to Missouri Valley Bridge & Iron Co., Leavenworth, Kan., Tway Inc., Oklahoma City, general contractor. Capitol Steel Co., Oklahoma City, awarded reinforcing bars.

250 tons, Louisiana street viaduct, Buffalo, to R. S. McMannus Steel Construction Co., Buffalo.

200 tons, addition, Eastern States Milling Co., Buffalo, to C. F. Ernst, Buffalo.

200 tons, loft building for P. J. Walker, Los Angeles, to Consolidated Steel Corp., Los Angeles

175 tons, approximately, sheet piling, booster pumping plant and dam, Delcarlia, near Washington, reported placed with Kalman Steel Corp., Bethlehem, Pa., through Lacchi Construction Co., Baltimore.

150 tons, boiler house addition, Milwaukee, to Hackendahl & Schmidt Co., Milwaukee.

150 tons, railroad trestle, National Grocery Co., Jersey City, N. J., to McClintic-Marshall Corp., Bethlehem, Pa.

150 tons, high school addition, Painesdale, Mich., to Wisconsin Bridge & Iron Co., Milwaukee.

125 tons, building, Majestic Silk Mills, Buena Vista, Va., to Virginia Bridge & Iron Co., Roanoke, Va.

125 tons, powerhouse, for Fall City Ice & Beverage Co., Louisville, Ky., to Jones & Laughlin Steel Corp., Pittsburgh.

100 tons, Florence Stove Co. factory, Kankakee, Ill., to Wendnagel & Co., Chicago.

100 tons, county bridge, Ulster county, New York, to Harris Structural Steel Co., New York; Howard C. Winne, Kingston, N. Y., general contractor.

100 tons, addition, Federal Mill & Elevator Co., Lockport, N. Y., to R. S. McMannus Steel Construction Co., Buffalo.

100 tons, county court house, Alfred, Me., to Hussey Mfg. Co., North Berwick, Me.; J. M. Johnson, Saco, Me., general contractor.

100 tons or more, addition, Pacific Mills Co., Lyman, N. C., to Piedmont Iron Works, Spartansburg, S. C.; Gallivan Construction Co., Greenville, S. C., general contractors.

Shape Awards Compared

	Tons
Week ended July 29	**24,575**
Week ended July 22	**7,552**
Week ended July 15	**5,706**
This week in 1932	**24,957**
Weekly average, 1932	**14,285**
Weekly average, 1933	**15,036**
Weekly average, June	**12,878**
Total to date, 1932	**484,860**
Total date, 1933	**466,109**

Contracts Pending

4500 tons, superstructure suspension bridge, York river, Gloucester Point to Yorktown, Va.; Independent Bridge Co., Pittsburgh, low at $797,400. Cables require 500 tons of wire.

1500 tons, Wabash railroad, for car repairs at its Decatur, Ill., shops.

750 tons, state hospital building, Mount Morris, N. Y.; John W. Cowper Co., Buffalo, low.

730 tons, bridge, Hamilton, O., over the Miami river, for Ohio state highway department.

405 tons, bridge, Roanoke river, Mecklenburg county, Virginia; bids Aug.

8. Project takes 40 tons of reinforcing bars.
400 tons, highway bridges, Oklahoma.
400 tons, brewery, Scranton, Pa.; new bids to be submitted shortly.
380 tons, piling, substructure, Dover-Newington, N. H., bridge; Crandall Engineering Co., Cambridge, Mass., general contractor.
325 tons, bridge for United States bureau of public roads, Humphrey, Idaho.
322 tons, highway work in Clark county, Utah; bids Aug. 3.
300 tons, bridge, Boston & Maine railroad, Everett, Mass.
300 tons, Elmira, N. Y., grade crossing elimination; Metzger Construction Co., Buffalo, low bidder.
256 tons, I-beams, channels, angles and tees, bureau of supplies and accounts, navy, Washington; bids Aug. 8, delivery Portsmouth, N. H., submarine construction.
250 tons, St. Andrew's Roman Catholic church, New York.
240 tons, German-American Brewing Co., Buffalo; John Johnson Construction Co., Buffalo, general contractor.
150 tons, addition, Diamond Match Co., Oswego, N. Y.; James Leck Co., Minneapolis, general contractor.
150 tons, Loew theater, Brooklyn, N. Y.
125 tons, Pennsylvania railroad grade crossing elimination, Springbrook, N. Y.; bids in.
120 tons, bridge Dan river, route 58, Halifax conty, Virginia; bids in July 27. Project requires 37 tons of reinforcing bars.
100 tons, postoffice, Breckenridge, Tex.; James I. Barnes, Logansport, Ind., low.
100 tons, bridge, Blacks Crossing, Lebanon county, Pennsylvania; early award expected.
100 tons, bridge over Peikioman creek, Montgomery county, Pennylvania; early action expected.
100 tons or more, additional buildings, marine hospital, Portland, Me.; V. & M. Construction Co., New Rochelle, N. Y., low.
Unstated tonnage, following federal projects on dates named: postoffice, West Bend, Wis., Aug. 21; quarantine station buildings, Boston, Aug. 17; Catskill, N. Y., postoffice, Aug. 16.

Concrete Bars

Awards Increase, with Placing of 8700 Tons for San Francisco-Oakland Bridges —Several Brewery Projects Also Take Good Tonnages— Producers Stabilizing Prices

REINFORCING BAR PRICES, PAGE 41

Pittsburgh—The price of new billet steel reinforcing bars is contingent upon whatever decision is made affecting the price of hot-rolled merchant bars. Producers of reinforcing steel are reluctant to make commitments very far ahead, although it is probable the 1.75c price on cut lengths to distributors will continue in view of the almost certainty that 1.60c, Pittsburgh, is to be the hot-rolled merchant bar price. Recent specifications have been small, with the exception of a 1000-ton order which a district mill is preparing to roll.

Cleveland — New billet steel reinforcing bars in mill lengths to distributors are due to be increased $3 a ton to 1.65c, base, Cleveland, the same base as soft steel bars, by the leading producer here, for August. Some producers have been committing themselves only ten days ahead. Slum elimination work at Toledo, O., as now planned will require 2000 tons of concrete bars; and the initial plan for Cleveland slum elimination calls for about 500 tons, though these projects await federal aid. The state opened bids July 28 on road work requiring 200 tons.

Chicago—Reinforcing bar inquiries for private construction are more numerous, but involve only small lots. Illinois takes bids July 31 on 470 tons for two state bridges, while about 1000 tons are pending for Indiana road work. For a building at Peoria, Ill., 200 tons have been placed. Current quotations are named for August shipment.

Boston — Expansion in highway construction in the New England states is expected to stimulate buying of reinforcing mesh shortly. Prices on average sales are steadier at 1.75c, Buffalo and Pittsburgh, for cut lengths.

Philadelphia — Reinforcing bar tonnage is negligible. Meanwhile billet steel bar prices are unsettled, but with firmness indicated upon the application of the steel code.

New York—Concrete reinforcing bars are steadier on small-lot business at 1.75c for cut lengths, Buffalo and Pittsburgh. Inquiry is light, but the outlook is brightened with the approach of several substantial New York state highway lettings.

Concrete Awards Compared

	Tons
Week ended July 29	10,825
Week ended July 22	3,724
Week ended July 15	740
This week, 1932	3,015
Weekly average, 1932	3,920
Weekly average, 1933	3,373
Weekly average, June	2,406
Total to date, 1932	130,443
Total to date, 1933	104,571

Contracts Placed

4900 tons, west bay substructure, San Francisco-Oakland bridge, to Pacific Coast Steel Corp., San Francisco.
3800 tons, east bay substructure, San Francisco-Oakland bridge, to Pacific Coast Steel Corp., San Francisco.
500 tons, brewery, Los Angeles, to Pacific Coast Steel Corp., Los Angeles.
300 tons, loft building for P. J. Walker, Los Angeles, to Soule Steel Co., Los Angeles.
200 tons, addition to Bullock's Store, Hill street, Los Angeles, to Soule Steel Co., Los Angeles.
200 tons, brewery, Vernon, Calif., to Truscon Steel Co., Los Angeles.
200 tons, roads for San Gabriel dam No. 1, Los Angeles, to Pacific Coast Steel Corp., Los Angeles.
200 tons, building, Peoria, Ill., for Premier-Pabst Corp., to Joseph T. Ryerson & Son Inc., Chicago.
200 tons, warehouse, Manhattan Refrigerating Co., New York, to Kalman Steel Corp., Bethlehem, Pa.; through Walter Kidde Constructors Inc.
175 tons, Ehler's warehouse, Brooklyn, N. Y., to Igoe Bros., Newark, N. J; through Caye Construction Co.
150 tons, Berkeley dormitory at Yale, New Haven, Conn., to Joseph T. Ryerson & Son Inc., New Haven; through Marc Eidlitz & Son Inc.
100 tons, stadium, University of North Carolina, Raleigh, N. C., to Southern General Fireproof Co., Atlanta, Ga.; Southeastern Construction Co., Charlotte, N. C., general contractor.

Contracts Pending

2000 tons, mesh and bars, bridges and highways, ten counties in New York; bids Aug. 11.
470 tons, bridge, Justice Park and Morris, Ill.; bids July 31.
400 tons, Danahy Stores warehouse, Buffalo; John W. Cowper Co., Buffalo, general contractor.
300 tons, substructure, bridge, York river, Gloucester Point to Yorktown, Va.; Merritt-Chapman & McLean Corp., Baltimore, low at $497,000.
300 tons, sewer, St. Louis.
200 tons, factory building, Bayonne, N. J.
150 tons, building, Washington university, St. Louis.
140 tons, Irish-American Home, San Francisco; bids rejected and new bids will be called for.
125 tons, substructure, Dover-Newington, N. H., bridge; Crandall Engineering Co., Cambridge, Mass., contractor.
103 tons, building, St. Peter's college, Jersey City, N. J.
100 tons, state highway work in San Diego county, Calif.; bids Aug. 2.

Stationary boilers sold in June numbered 496, compared with 307 in May. Marine boilers numbered 15 in June, compared with 21 in May. Total boilers sold in first half of 1933 were 1640, compared with 1580 in first half of 1932.

Pipe

Cleveland Taking Bids on 35,600 Tons of Cast and Steel Pipe—Makers Filing Code Prices

PIPE PRICES, PAGE 41

Pittsburgh—The market is mainly active in mechanical tubing and small sizes of seamless tubing. Line pipe inquiries and orders still are lacking. Other oil country goods such as drill pipe, drill casing, fittings and tubular products for feeder lines are in slow demand. Pipe mill operations in this district are not much above 30 per cent. Prices prevail as on the July 1 cards. Wheeling Steel Corp., Wheeling, W. Va., has placed its Benwood plant on capacity operations, with three shifts scheduled in the skelp mill instead of two as formerly. Two orders for about 1000 tons each of line pipe are reported to have been entered by a district mill for undisclosed buyers.

Cleveland—This city is taking bids Aug. 3 for 36 miles of watermains requiring approximately 32,000 tons of cast iron pipe, 24 to 48 inches diameter, 2600 tons of plates for welded or riveted construction and 1000 tons of pipe fittings. The market otherwise is quiet, jobbers continuing to buy occasional carloads.

Chicago—Only small lots of cast iron pipe appear in new inquiries and orders. Release of a large tonnage awaits the granting of federal loans. Prices are steady, and there are some expectations of higher quotations in view of recent advances in material and wages.

Boston—Buying has declined following a moderate increase in demand the first half of July. Providence, R. I., is in the market for several hundred tons. A fair volume of small-lot business is being closed at $34 to $36, eastern foundry, but concessions are offered on larger inquiries.

New York—Bids are in on close to 1000 tons of cast iron pipe for Pelham, N. Y. State work also accounts for about 1000 tons, including some in connection with highway contracts. Westchester county is taking several hundred tons for sewer work. Prices are unchanged.

Pan American Petroleum & Transport Co., New York, has released approximately 3500 tons of steel pipe of miscellaneous sizes for installation at Texas City, Tex.

Birmingham, Ala. — Awards for cast iron pipe are slow. Several contracts recently were divided among producers here.

Cast Pipe Pending

450 tons, Hudson River hospital, Poughkeepsie, N. Y.; bids in.
400 tons, state highway, Carmel, N. Y.
Unstated tonnage, 7000 feet, 6, 8 and 12-inch, Fond du Lac, Wis.; bids soon.
172 tons, 18-inch class B or 150, Alhambra, Calif.; United States Pipe & Foundry Co., Birmingham, Ala., low.
167 tons, 6-inch class B, Santa Monica, Calif.; bids July 31.

Steel Pipe Pending

Unstated tonnage, 1200 feet, 20-inch i. d. shore pipe and 600 feet, 30-inch pontoon pipe, United States engineer, Wilmington, N. C.; bids Aug. 8. Dixie Culvert & Metal Co., Jacksonville, Fla., awarded 100 pieces shore pipe on bids of July 18, at $2160, delivered.
Unstated tonnage, 7600 feet welded steel pipe, burea of supplies and accounts, navy, Mare Island, Calif.; including 6000 feet, 3-inch galvanized; remainder 3¾-inch black extra strong; bids Aug. 1.

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Railroads

Tie Plates Advanced $3; New Differentials Named

Track Material Prices, Page 41

Track fastenings are the most active of steel products going to railroads, the Missouri Pacific having divided 1,500,000 tie plates between Scullin Steel Co., St. Louis, Colorado Fuel & Iron Co., Denver, and Sheffield Steel Corp., Kansas City, Mo., and Florida East Coast having placed its inquiry for 2100 kegs of spikes with a southern maker. Two important western roads are expected to inquire early in August for track accessories and rails. Releases on the latter are coming to mills in good volume. It is reported Carnegie Steel Co. has been given 7000 tons of rails against an option.

Tie plates have been advanced $3 per ton to $38, Pittsburgh, with quantity differtials applying. Base is 20 tons or over; 10 to 19 tons, inclusive, $3 premium; five to nine tons, $6 premium; two to four tons,

$15 premium; one ton, $40 premium.

Spike prices have been continued through third quarter at 2.40c, basing point, unchanged, but with quantity differentials. Base is 200 kegs or more; 100 to 199 kegs, inclusive, 10 cents per hundred pounds premium; 25 to 99 kegs, inclusive, 25 cents premium; on less than 25 kegs, 50 cents premium.

Car repairs are occupying a larger place in railroad activity and additional men are being recalled to work, roads centering in Memphis, Tenn., planning to add 1000 men to shop forces, as traffic is the heaviest since 1929. The Wabash is inquiring for 1500 tons of shapes for repairs to 300 freight cars at its shops at Decatur, Ill. Baltimore & Ohio is inquiring for parts for an unstated number of open-top cars.

Youhiogheny Ohio Coal Co., Cleveland, bought 325 mine cars instead of coal cars, as reported in STEEL, July 24.

Car Orders Placed

Hillman Coal & Coke Co., Pittsburgh, 300 mine cars, to Lorain Steel Co., Johnstown, Pa.

Car Orders Pending

Federal engineer, New Orleans, four electrically propelled asphalt cars; bids July 3, rejected.

Strip

Users Well Covered; New Prices Not Yet Tested

Strip Prices, Page 41

Pittsburgh—Although some producers are selling hot-rolled strip at 1.65c base, Pittsburgh, as far ahead as Aug. 31, there actually has been little test of this price. Many buyers were solicited to enter contracts before the beginning of the quarter at 1.60c, Pittsburgh. The market is firm for all new business, and 1.65c, Pittsburgh, is steady, with the possibility that 1.70c, Pittsburgh, may soon apply. Cold-rolled strip is in a market similar to hot-rolled in that 2.25c, Pittsburgh or Cleveland, is the base for new buying but regular contract customers were permitted to purchase at 2.00c and less, before third quarter.

Chicago — Strip producers still have fairly substantial backlogs despite some decrease in new business. Deliveries on some grades are extended three to four weeks and with automotive operations showing considerable resistance to seasonal influences, the August outlook remains favorable. Current prices still are tested by only small lots. The market generally is 1.75c, Chicago, for hot strip and 2.25c, Pittsburgh-Cleveland, for cold-rolled strip.

Boston—Strip mill operations are heavy on old orders and some buyers are pressing for delivery. The 2.45c, Worcester, price on cold-rolled has not been tested.

Cleveland—Strip mills continue rushed for delivery on late June specifications, and some will not be able to get out all material by Aug. 15. Cold-rolled strip is firm at 2.25c, base, Cleveland; hot-rolled strip is being booked by some producers at 1.60c, base, Pittsburgh, others quoting 1.65c.

Philadelphia—Strip buying is less active than a month ago, but with hot strip apparently steady at 1.65c, Pittsburgh, on shipments up to Sept. 30 and cold strip at 2.25c, Pittsburgh, with a 31-cent freight rate on carlots for deliveries here.

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Pig Iron

Sales Mainly in Small Lots—Shipments Heavy—Industrial Code Alters Price Setups

PIG IRON PRICES, PAGE 42

Pittsburgh—Merchant iron prices are firm and demand is steady, though in small lots. Orders are booked at $17, Neville Island, Pa., base on foundry and malleable grades; $16.50 for basic and $17.50 for bessemer. Union Steel Casting Co., Pittsburgh, is low on castings for dredge pump and ladder parts for the St. Louis engineers. Hempfield Foundries Co., Greensburg, Pa., expects to reopen about Aug. 1. Columbia Radiator Co., McKeesport, Pa., is on a six-day week for the first time in two years. Sales of low phosphorus iron at $25 are considerably improved and with yard stocks greatly reduced the Struthers Iron & Steel Co., Struthers, O., stack is reported preparing to blow in.

Cleveland — Interlake Iron Corp. has blown in one of its two blast furnaces at Toledo, O. Corrigan, McKinney Steel Co. here prepared to blown in its fourth stack, had it ready, but is deferring it. July generally is the year's low month in shipments, but this July is the best so far this year, with shipments about 50 per cent ahead of June. Small sales have been made at the recent advance of $1 a ton, with volume lighter than in recent weeks. The Cleveland furnace base remains $16.50 for local and outside shipment.

Chicago — While July shipments were about 30 per cent heavier than those of June, a slight decrease is seen for August. New buying recently has been moderately heavier following a quiet period after the advance of $1 a ton in prices, with expectations of further price increases seen as stimulating some of recent purchasing. The present market of $17, furnace, for No. 2 foundry and malleable is quoted on shipments over the balance of this quarter, though there are some expectations of higher levels for fourth quarter.

Boston — Smaller consumers are buying close to requirements. Prices are firm at recent advances. By placing western Connecticut on a Boston base, delivered prices on Buffalo iron to those points impose an advance of approximately 50 cents a ton. Some action is considered possible in connection with the industrial code by which imported iron prices will be leveled up nearer domestic quotations.

New York—Although new tonnage continues to lag, shipments are well maintained. Last week the Port Henry, N. Y., furnace was blown in, making the second New York furnace to resume this month, the other being the Chateaugay stack. Prices are firm.

Philadelphia—Shipments are well sustained, although, following the recent advance of $1 a ton, new tonnage has been somewhat spotty. Low phosphorus iron is being adjusted to higher levels.

Buffalo—Production increased materially when the Hanna Furnace Corp. stack at the Rogers-Brown Works began producing iron on July 26. Another stack is being prepared for local production by Hanna interests. Sales have slowed, but shipments are on the largest scale of the year.

Cincinnati — Shipments for July were heavier than June, with indication that iron is going into production and not stock. Instances of night operation of foundries on seasonal lines have been reported. New ordering has dwindled.

St. Louis—New sales are confined

Code Limits Basic Price to Iron for Open Hearth Use

UNDER the pig iron industry's code an important sales principle has been decided upon. Hereafter, basic pig iron may not be sold at the basic price if the iron is to be used in a cupola. Basic purchased for the cupola will take the price of foundry iron, in most cases 50 cents a ton higher than basic. The basic price prevails only when the iron is for the open hearth. This is intended to abolish a practice some foundries have had in replacing usual foundry iron with basic iron. Another important provision to the code is the decision that southern pig iron will sell in the Pittsburgh district at 50 cents a ton differential under the Neville Island, Pa., base.

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to small tonnages, mainly for prompt delivery. Shipments continue heavy, preliminary reports indicating that the movement to melters in this district for July will be the largest for any single month in almost three years. Furnaces have not named prices beyond Sept. 30.

Birmingham, Ala.—New business has declined but deliveries continue active. Production will be increased next week by the blowing in of an additional blast furnace, the second of the Republic Steel Corp. Record output is expected for July at the two blast furnaces of the Tennessee Coal, Iron & Railroad Co. at Fairfield, Ala.

Toronto, Ont.—Demand is holding at the level of the past two or three weeks. The daily melt is around 50 per cent. Prices are steady and unchanged.

Coke

Large Tonnages Pending; Future Price Uncertain

Coke Prices, Page 42

Sellers of premium beehive foundry coke have not revised prices above $4, Connellsville ovens. and thereby have not shared in the advances in furnace and common foundry coke. Clairton by-product likewise remains unchanged at $3, this district. An inquiry is out for 15,000 tons of furnace coke for a furnace interest in the East and there are other inquiries for lots of around 10,000 tons. One pressing inquiry at present is for 50 carloads. Sellers are reluctant to quote beyond day-to-day requirements of consumers and are naming $2.75 to $3.25 ovens, where future protection is required.

Chicago producers continue $7.50 ovens, for outside delivery and $8.25, Chicago delivery, to apply to August shipments of by-product coke. Quotations are not being made beyond.

Ferroalloys Strong

Ferroalloy Prices, Page 42

Buying of ferromanganese in the open market by steel producers in the Pittsburgh district still is unabated. The price of $82, seaboard, or $87.24 delivered, Pittsburgh, is reported continuing on last-half contracts. Carnegie Steel Co. now has two of its blast furnaces on ferromanganese with the lighting recently of a second Isabella furnace. Domestic spiegeleisen is quoted nominally at $27, furnace.

Extend Bolt, Nut Prices To Entire Third Quarter

Bolt, Nut, Rivet Prices, Page 41

Bolt, nut and rivet prices have been applied to entire third quarter after being held to July only. Producers stipulate in contracts that prices are subject to change contingent on application of the new steel code. Buying is somewhat less than in June but shipments are heavier. Railroads have been moderate buyers though somewhat heavier in the Pittsburgh district. Cleveland producers find July tonnage was the best in years. Jobbers bought liberally in June before the recent increase but are covering further as their stocks move. The present price is 73 off for bolts and nuts, 2.50c, Pittsburgh, and 2.60c, Chicago, for large rivets.

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Our catalog will tell you the whole story about Udylite-Cadmium. Write for it.

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Scrap

Prices Strong and Advancing—Future Tonnages Difficult To Place—Some Grades Scarce

Pittsburgh—The market on heavy melting steel is steadying at $13.50 to $14. Three mills entered the market at the $14 level last week but obtained only small tonnages. Practically all consuming mills in this district now are in the market but with the expectation that $14 will be repeated on the next sale. Other grades have settled at the advanced levels of a week ago. The Pennsylvania railroad has issued a 15,000-ton list, includuing 2200 tons of heavy melting steel, 800 tons of No. 2 railroad wrought and smaller tonnages of specialties, to close Aug. 2. The Lorain, O., works of National Tube Co. is reported in this district to have purchased a tonnage of compressed sheet scrap, price undisclosed.

Cleveland—National Tube Co. is

IRON AND STEEL SCRAP PRICES

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	9.00 to 10.00
Boston, dealers	7.00 to 7.50
Buffalo, No. 1	11.00 to 11.50
Buffalo, No. 2	10.00 to 10.50
Chicago	10.50 to 10.75
Cleve., No. 1	10.50 to 11.00
Cleve., No. 2	10.00 to 10.50
Det., No. 1	9.50 to 10.00
Det., No. 2	8.50 to 9.00
E. Pa., del. mill	12.00
E. Pa., No. 2 del.	10.50
Federal, Ill.	8.75 to 9.25
Granite City, Ill.	8.00 to 8.50
N. Y., deal. R. R.	8.00 to 8.50
N. Y., deal. No. 2	6.50 to 7.00
N. Y. deal. yd.	5.50 to 6.00
Pitts., No. 1	13.50 to 14.00
St. L. No. 1 del.	9.00 to 9.50
Valleys, No. 1	13.00

COMPRESSED SHEETS

Buffalo, dealers	9.50 to 10.50
Chi. (Factory)	8.50 to 9.00
Cleveland	10.00 to 10.50
Detroit	9.25 to 9.75
E. Pa. new mat.	11.00 to 11.50
Pittsburgh	13.00 to 13.50
Valleys	12.50

BUNDLED SHEETS

Buffalo	5.50 to 6.00
Cincinnati, del.	6.00 to 6.50
Cleveland	8.00 to 8.50
Eastern Pa.	9.00 to 10.00
Pittsburgh	12.00 to 12.50
St. Louis	5.50 to 6.00

SHEET CLIPPINGS LOOSE

Chicago	5.00 to 5.50
Cincinnati	5.00 to 5.50
Detroit	6.00 to 6.50
St. Louis	5.00 to 5.50

STEEL RAILS SHORT

Birmingham	11.50 to 12.00
Boston, dealers	6.00 to 6.50
Buffalo	12.00 to 12.50
Chicago (3 ft.)	11.50 to 12.00
Chicago (2 ft.)	12.00 to 12.50
Cincinnati, del.	11.50 to 12.00
Detroit	11.00 to 11.50
Pitts. (open-hearth, 3 ft. and less)	15.00 to 15.50
St. Louis	10.50 to 11.00

STOVE PLATE

Birmingham	7.00 to 7.50
Boston, dealers	4.25 to 4.50
Buffalo	9.00 to 9.50
Chicago, net	8.00 to 8.50
Cinci., deal. net	6.00 to 6.50
Detroit, net	4.00 to 4.50
Eastern Pa.	9.00 to 9.50
N. Y. deal. Fdry.	5.50
St. Louis	7.00 to 7.50

COUPLERS, SPRINGS

Buffalo	11.50 to 12.00
Chicago	11.00 to 11.50
Eastern Pa.	12.50 to 13.50
Pittsburgh	15.00 to 15.50
St. Louis	10.00 to 10.50

ANGLE BARS—STEEL

Chicago	11.00 to 11.50
St. Louis	9.50 to 10.00

LOW PHOSPHORUS

Buffalo, billets and bloom crops	11.50 to 12.50
Cleveland bil. and bloom crops	12.50 to 13.50
Eastern Pa.	13.00 to 14.00
Pittsburgh billet bloom crops	15.50 to 16.00
Pitts., sheet bar crops	15.50 to 16.00

FROGS, SWITCHES

Chicago	10.50 to 11.00
St. Louis	10.00 to 10.50

SHOVELING STEEL

Chicago	10.50 to 10.75
Cleveland	6.75 to 7.00
St. Louis	9.00 to 9.50

RAILROAD WROUGHT

Birmingham	7.00 to 7.50
Boston, dealers	2.00 to 2.50
Buffalo, No. 1	7.00 to 8.00
Buffalo, No. 2	11.00 to 11.50
Chi., No. 1, net	9.00 to 9.50
Chi., No. 2	10.50 to 10.75
Cinci., No. 2	9.00 to 9.50
Eastern Pa.	13.00
N. Y., No. 1 deal.	5.50 to 6.00
Pitts., No. 1	13.50 to 14.00
St. Louis, No. 1	7.00 to 7.50
St. Louis, No. 2	8.75 to 9.25

SPECIFICATION PIPE

Boston	3.50 to 4.00
Eastern Pa.	9.50 to 10.00
N. Y., deal.	5.50 to 6.00

BUSHELING

Buffalo, No. 1	9.50 to 10.50
Chicago, No. 1	8.50 to 9.00
Cinci., No. 1 deal.	6.50 to 7.00
Cinci., No. 2	3.00 to 3.50
Cleve., No. 2	7.50 to 8.00
Det., No. 1 new	7.75 to 8.25
St. Louis, No. 1	6.00 to 6.50
Val. new No. 1	12.00 to 12.50

MACHINE TURNINGS

Birmingham	3.00 to 3.25
Boston, dealers	4.00 to 4.25
Buffalo	6.25 to 6.75
Chicago	6.00 to 6.50
Cinci., deal.	5.50 to 6.00
Cleveland	7.25 to 7.50
Detroit	6.25 to 6.75
Eastern Pa.	8.00 to 8.50
N. Y., deal.	4.00 to 4.50
Pittsburgh	10.50 to 11.00
St. Louis	3.00 to 3.50
Valleys	10.75 to 11.00

BORINGS AND TURNINGS
For Blast Furnace Use

Boston, dealers	3.50 to 3.75
Buffalo	6.50 to 7.00
Cinci., deal.	5.50 to 6.00
Cleveland	7.75 to 8.00
Detroit	6.50 to 7.00
Eastern Pa.	7.00 to 7.50
N. Y., deal.	4.00 to 4.50
Pittsburgh	10.00 to 11.00

CAST IRON BORINGS

Birming., plain	3.00 to 3.25
Boston, chem.	9.00 to 10.00
Boston, dealers	3.25 to 3.50
Buffalo	6.25 to 6.75
Chicago	6.00 to 6.50
Cinci., deal.	5.50 to 6.00
Cleveland	7.75 to 8.00
Detroit	6.50 to 7.00
E. Pa., chem.	10.00 to 12.00
N. Y., deal.	4.00 to 4.25
Pittsburgh	10.00 to 11.00
St. Louis	3.50 to 4.00

PIPE AND FLUES

Cinci., deal.	4.50 to 5.00

RAILROAD GRATE BARS

Buffalo	5.00 to 5.50
Chicago, net	7.50 to 8.00
Cincinnati	5.00 to 5.50
Eastern Pa.	9.00 to 9.50
N. Y., deal.	4.50 to 5.00
St. Louis	6.00 to 6.50

FORGE FLASHINGS

Boston, dealers	4.50 to 5.00
Buffalo	9.00 to 9.50
Cleve. ov. 10 in.	9.00 to 9.50
Detroit	7.50 to 8.00

FORGE SCRAP

Boston, dealers	4.00 to 4.50
Chicago (heavy)	11.50 to 12.00
Eastern Pa., del.	10.00

ARCH BARS, TRANSOMS

Chicago, net	8.00 to 8.50
St. Louis	9.00 to 9.50

AXLE TURNINGS

Boston, dealers	4.00 to 4.25
Buffalo	7.50 to 8.00
Chi., elec. fce.	8.00 to 8.50
Cleveland	7.25 to 7.50
Eastern Pa., del.	10.00 to 10.50
St. Louis	4.00 to 4.50

STEEL CAR AXLES

Birmingham	9.00 to 9.50
Boston, ship. pt.	8.00 to 8.50
Buffalo	10.00 to 11.00
Chicago, net	11.50 to 12.00
Eastern Pa.	15.50
St. Louis	10.25 to 10.75

SHAFTING

Boston, ship. pt.	9.50 to 10.00
Eastern Pa.	15.00 to 15.50
N. Y., deal.	10.00 to 10.25
St. Louis	7.50 to 8.00

CAR WHEELS

Birming., iron	9.00 to 9.50
Boston, iron deal.	5.50 to 6.00
Buffalo, iron	8.00 to 9.00
Buffalo, steel	11.00 to 11.50
Chicago, iron	9.50 to 10.00
Chi., rolled steel	11.50 to 12.00
Cincinnati, iron	8.50 to 9.00
E. Pa., iron	12.00 to 13.00
E. Pa., steel	12.50 to 13.50
Pitts., iron	12.50 to 13.00
Pitts., steel	15.00 to 15.50
St. Louis, iron	8.50 to 9.00
St. Louis, steel	10.00 to 10.50

NO. 1 CAST SCRAP

Birmingham	9.00 to 10.00
Boston, No. 2	5.00 to 5.50
Boston, Tex. con.	10.00 to 10.50
Buffalo, cupola	10.00 to 10.50
Buffalo (mach.)	11.00 to 11.50
Cleve. cupola	10.50 to 11.00
Chi., mach. net	10.00 to 11.00
Chi., railroad net	10.00 to 10.50
Cinci., mach. cup.	9.00 to 9.50
Cleve. cupola	10.00 to 10.50
Detroit, net	8.50 to 9.00
E. Pa., cupola	11.50 to 12.00
N. Y., cup. deal.	6.00 to 6.50
N. Y., del. local foundries	9.00 to 9.50
Pitts., cupola	11.00 to 12.00
San Fran., del.	13.50 to 14.00
Seattle	4.50 to 6.50
St. Louis, No. 1	8.50 to 9.00
St. L. No. 1 mach.	8.50 to 9.00

HEAVY CAST

Boston, del.	5.25 to 5.50
Bost., mach. cast	7.00 to 7.50
Buffalo, break	7.00 to 8.00
Cleve., break	7.50 to 8.00
Detroit, auto net	9.50 to 10.00
Detroit, break.	6.50 to 7.00
Eastern Pa.	10.00 to 10.50
N. Y., No. 1, deal.	7.00 to 7.50
N. Y., break. deal.	6.25 to 6.75
Pittsburgh	10.00 to 10.50

MALLEABLE

Boston, consum.	9.50 to 10.00
Buffalo	11.50 to 12.00
Chicago, R. R.	11.00 to 11.50
Cinci., agri. del.	8.50 to 9.00
Cinci., R. R. del.	9.00 to 9.50
Cleveland, rail	11.50 to 12.00
Detroit, auto	8.50 to 9.00
St. Louis, R. R.	9.00 to 9.50

RAILS FOR ROLLING
5 feet and over

Birmingham	9.50 to 10.50
Boston, dealers	6.00 to 6.50
Buffalo	9.00 to 9.50
Chicago	11.00 to 11.50
Eastern Pa.	12.00
New York, dealer	7.00 to 7.25
St. Louis	10.50 to 11.00

LOCOMOTIVE TIRES

Chicago, cut	11.00 to 11.50
St. L., No. 1	8.50 to 9.00

LOW PHOS. PUNCHINGS

Buffalo	11.00 to 11.50
Chicago	11.50 to 12.00
Eastern Pa.	12.50 to 13.50
Pittsburgh	15.00 to 15.50

said to have bought a tonnage of compressed sheets at Detroit for delivery at its plant at Lorain, O., at $12 to $12.50. Two cargoes of scrap from the Detroit district have been unloaded for Cleveland steel mills the past week. Accumulations of scrap in Michigan lake ports north of Port Huron are said to be of fair size but not available at present prices. Prices are unchanged here. Some consumers in the Valleys are holding back shipments as they have large stocks.

Chicago — Scrap is marking time and prices lack the upward tendency which has developed in some other districts recently. Offerings are heavier, aided by larger lots resulting from equipment scrapping programs of railroads. Consumption continues active, however, and additional buying is anticipated shortly. Prices on nearly all grades are unchanged with heavy melting steel continuing $10.50 to $10.75. Material continues to move to docks for eastern shipment, up to $11 having been paid for tonnages for water movement. Requirements of steel foundries gradually are increasing, while gray iron foundry schedules are somewhat heavier.

Boston — Scrap prices for New England delivery have again advanced, dealers paying up to $7.50, shipping point, for No. 1 heavy melting steel. Local consumers have been slow to meet advances on some grades and in two instances have sought tonnage outside New England only to confront an even firmer price.

New York — Demand for most grades of scrap has declined slightly, with prices strong, some advances being noted. For No. 1 heavy melting steel, $8.50 is reported to have been paid at shipping point with better than $7, f.o.b. for No. 2, Rail shipments, largely from northern New Jersey, and barge buying at New York, hold well. For delivery to Rhode Island $8.75 for No. 1 machinery cast has been refused by one dealer. Yard steel and No. 1 machinery cast have been advanced.

Philadelphia—No. 1 steel has been advanced to $12, delivered on a purchase of approximately 5000 tons by a consumer in this district. Except for a few items, including heavy breakable and cupola cast, the market is generally higher. Bethlehem Steel Co. recently closed on approximately 1000 tons of No. 1 steel for Sparrows Point, Md., at $9.50, delivered, a price that did not affect directly the local market.

Buffalo — Importation of large quantities of scrap from outside markets is making serious inroads into sales of local dealers. More than 3500 tons of blast furnace scrap arrived last week from Detroit and other lake and canal cargoes are expected. A substantial tonnage of boiler and other miscellaneous scrap has been purchased by the leading consumer here from an automobile manufacturer in Detroit.

Cincinnati — Quotations on iron and steel scrap are unchanged, although prices are strong. Demand has broadened. Several interests which bought heavily in the spring are expected to renew inquiries soon.

St. Louis—Speculative elements have entered the iron and steel scrap market to a greater extent than for a number of months. This, with growing scarcity of some grades, is accountable largely for a strong tone. Except country mixed scrap, which was lifted $1 per ton to $5.50 to $6, there has been no revision in price but it is evident no large tonnage could be obtained at current quotations.

Birmingham, Ala.—Deliveries are active and sales are being reported daily with prices firm. Heavy melting steel is still the principal commodity commanding attention. Larger consumers of melting steel have good sized tonnages on hand.

Toronto, Ont.—Improvement in demand is shown in iron and steel scrap. This is reflected in firmer prices. Dealers have advanced their buying prices for rails $1.50 a ton; heavy melting steel and wrought axles are up $1 to $5.50; cast borings and machine shop turnings have been advanced 50 cents a ton to $3 and $2.50 respectively. Other lines are unchanged.

Wire

Nail Price Test Due; Deliveries Are Delayed

Wire Prices, Page 41

Pittsburgh—The market on nails continues at $2.10 per keg through third quarter with an important test likely around Aug. 1 when $1.80 and $1.85 contracts stand to be placed on a $2.10 basis. Plain wire at 2.10c to the manufacturing trade is steadier than the nail market. The wire products market features fewer orders recently, but mills are unable in many cases to make deliveries customers are demanding.

Cleveland—Wire and wire products tonnage booked here so far this year exceeds by a substantial margin the total for all of last year. During the week new sales tapered by about 5 per cent compared with the week preceding. Wire mills have not slackened their operating rate. Plain wire is firm at 2.10c, base, Cleveland, for August and September. Some mills have filed the current open market price schedule with the American Iron & Steel institute to apply under the new industrial code.

Chicago—Wire demand has experienced much less decrease the past month than had been anticipated.

Shipments are well maintained, while jobbers are moving stocks at a fairly good rate. Some distributors who increased inventories as a result of rising prices have found turnover sufficient to necessitate new purchases. Automotive needs continue active and August requirements will be only moderately below those of July. Producers are quoting $2.15 for carload lots of wire nails and 2.15c for plain wire on contracts for this quarter.

Boston—Wire mill operations continue at a high rate. Shipments are largely against old specifications, there being a decline in new buying. Some mills are rushed to make delivery by Aug. 15 against contracts. Demand for specialties and plain wire is steady, the latter being firm at 2.20c, Worcester.

Men of Industry

(*Concluded from Page* 19)

Lehigh Structural Steel Co., Allentown, Pa., has been elected treasurer and general manager, succeeding Robert L. Kift, who died June 25 after being secretary, treasurer and general manager for 14 years.

Mrs. Ethel Harrison Kift, widow of Mr. Kift, was elected vice president.

William H. Mohr, formerly vice president in charge of plant operation, is now secretary and plant manager.

These changes, made to fill the vacancy caused by Mr. Kift's death, leave the management in operation of the company exactly as it has been for the past 14 years. Ferdinand Thun, of Reading, Pa., remains president.

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Henry A. Getty has been appointed New England representative for the Alan Wood Steel Co., Conshohocken, Pa., with headquarters at 250 Stuart street, Consolidated Gas building, Boston. Mr. Getty is well known to New England steel buyers, having represented mills in that territory for many years.

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Otto Agricola, president, Agricola Stove & Foundry Co., Gadsden, Ala., was honored recently at a testimonial dinner by citizens of Gadsden, who presented a gold watch to him.

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Clifford F. Messinger, president, Chain Belt Co., and affiliated industries, Milwaukee, has been elected a trustee of the Northwestern Mutual Life Insurance Co., with home offices at Milwaukee.

□ □ □

E. E. Aldous has been appointed manager of sales, and R. J. Stakelum assistant manager of sales for the Texas district of the Tennessee Coal, Iron & Railroad Co., with offices at Houston, Tex.

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Paul Pigott, vice president, Wallace Bridge & Structural Steel Co., Seattle, has been appointed federal employment administrator for Washington under the public works section of the national recovery act. He is a son of the late William Pigott, founder of the Seattle Steel Co.

□ □ □

George Moir Johnstone MacKay has been appointed director of research of the American Cyanamid Co. and associated companies, New York. Mr. MacKay previously had been director of the insulation division research department of the General Electric Co.

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O. L. Pringle, vice president and general manager of the St. Louis Gas & Coke Corp., St. Louis; B. C. Colcord, superintendent of blast furnaces, and Paul Crider, plant engineer, have resigned as part of a program of George B. Evans, receiver, to reduce expenses.

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J. Harry Petty has been appointed assistant manager of hardware, welding wire and cold drawn steel sales by David H. Smith & Sons, Inc., Brooklyn, N. Y., warehouse distributors of iron and steel products. Mr. Petty has been connected with the Smith organization since 1920, and will work under the general supervision of Dudley J. Smith, manager of sales.

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John S. Casey, of New York, president of the Treadwell Construction Co. and the Midland Barge Co., both of Midland, Pa., turned over the tow boat FRANKLIN D. ROOSEVELT to Gen. T. Q. Ashburn, head of the Inland Waterways Corp., federal barge lines, when the new $250,000 diesel tow boat was christened on the Monongahela river at Pittsburgh recently.

George H. Dern, secretary of war, was also prominent among speakers at the christening.

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Harry Scullin, president of the Scullin Steel Co., St. Louis has been appointed a member of the board of three for Missouri which will submit to the public works administration projects for giving employment. Although placed on the inactive list after having reached the army retirement age, Mr. Scullin continued to serve as assistant chief of the St. Louis district of the ordinance office and president of the Army Ordnance association.

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E. R. Kyler, formerly president of the Witt-Humphrey Steel Co., Greensburg, Pa., has become president of the Kittoe Boiler & Tank Co., Can-

②
Pres.: How's Production?
Prod. Mgr.: W-e-l-l Better, Much better — But right now we're waiting for Steel
RYERSON STEEL SERVICE
continued on next page

ton, O. Other officers of the company are Dr. C. S. Hoover, Cleveland(vice president; W. J. Oby, Cleveland, treasurer, and Phil V. Oby, secretary. Mr. Kyler has had wide experience in fabricated steel construction. The company has rerecently booked substantial orders, sufficient to keep it in operation for some time.

Financial News of Steel Industry

(*Concluded from Page* 10)

ferred dividend resulted in a net loss of $407,451.84.

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Sharon Steel Hoop Co., Sharon, Pa., reports net loss of $257,426 for the first half, compared with net loss of $941,900 in the first half of 1932.

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A. M. Castle & Co., Chicago, encountered a net loss, after depreciation, taxes and other charges, of $46,569 in the first six months of 1933, against $99,040 loss in the first half of 1932.

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United Engineering Foundry Co., Pittsburgh, declared a regular quarterly dividend of $1.75 on preferred stock and the usual 25-cent quarterly on the common, both payable Aug. 11, to record Aug. 1.

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Granite City Steel Co., Granite City, Ill., had net profit of $111,079 in the second quarter, equal to 43 cents a share, against net loss of $80,325 in the first quarter. The net for the first half of 1933 is $30,754, compared with net loss of $10,838 in the first half of 1932.

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A. M. Byers Co. and subsidiaries reports for the quarter ended June 30 net loss of $265,237 after taxes, depreciation, etc. This compares with net loss of $328,214 in the preceding quarter, and net loss of $211,083 in the June, 1932, quarter. For the nine months ended June 30, the company's net loss is reported at $876,494.

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Interlake Iron Corp., Chicago, reports loss of $282,848 in the June quarter, after all charges, compared with loss of $211,562 in the first quarter of 1933 and loss of $574,734 in the second quarter of 1932. The loss for the first half of 1933 is $494,410, against $966,299 in the same period of 1932.

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Colorado Fuel & Iron Co., Denver and Pueblo, Colo., reports for the second quarter, after charges, net deficit of $803,765, compared with loss of $795,190 in the second quarter of 1932. For the first half of 1933 the deficit before deduction for equipment retired was $1,554,460; a year ago the loss was $1,194,469. Arthur Roeder, president, states that the abnormally quiet demand for track material, which accounts for so large a percentage of his company's production, was largely responsible.

Windows of Washington

(*Concluded from Page* 12)

er, Newport News Shipbuilding & Dry Dock Co. on the two aircraft carriers and the New York Shipbuilding Co. on the light cruisers.

REVISED code submitted by the cast iron soil pipe industry will be heard Aug. 2. The maximum work week is 30 hours, with the minimum daily wage $2.75 in the South and $4.25 elsewhere. . . . J. Carson Adkerson, president, American Manganese Producers association, has called a meeting in Washington Aug. 8 to pass on a tentative code providing a 40-hour week and hourly wages of 30 cents in the South and 35 cents in the West. . . . American Federation of Labor employment report shows gains in employment are slackening. The percentage of membership going back to work was 0.5 per cent in April, 0.3 in May, 1.3 in June and 0.7 in July. . . . Secretary of Commerce Roper has transferred the duties of the division of trade standards, division of specifications, division of simplified practice, safety core section and the building code and plumbing code sections of the building and housing division from the bureau of standards to the American Standards association. . . . General Johnson has requested the tariff commission to watch the import situation, it being intimated that if imports are coming into the United States at less than the American goods can be produced here, the President will be asked to employ the exible provisions of the tariff law. . . . The NRA program has overshadowed talk of further loans to Russia, for one thing for the purchase of machinery, and possible recognition, but many here believe that action is not far distant.

Here and There In Industry

WHITMAN & BARNES INC. manufacturer of twist drills, reamers, cutters and similar tools, with factories at Detroit and Walkerville, Ont., has completed a reorganization and has acquired three subsidiaries. The new companies taken over are Latrobe Tool Mfg. Co., Latrobe, Pa., manufacturer of twist drills and reamers and machine knives for the woodworking industry; J. M. Carpen-

③
Waiting for Steel? We've been waiting for orders for three years, now we wait for Steel?
RYERSON STEEL SERVICE
continued on next page

ter Tap & Die Co., Pawtucket, R. I., manufacturer of taps, dies, screw plates and similar products; Valley Forge Steel & Tool Co., Chicago, a distributing organization dealing in products made by these concerns. Sales organizations will not be consolidated and each company will continue its present personnel. Officers under the reorganization are: Clarence Avildsen, Chicago, chairman of the board; M. J. Kearins, Chicago, president, succeeding William H. Eager, who retired, but remains on the board of directors; Earl F. Reinhart and Erik Anderson, Chicago, vice president and treasurer, respectively. The new board of Whitman & Barnes Inc. is made up of the following: Clarence Avildsen; Edward B. Burling, Washington; William H. Eager, Detroit; Harry C. Edmonds, Chicago; Joseph G. Hamblen Jr., Detroit; Christian H. Hecker, Detroit; M. J. Kearins, Chicago; Karl Kendig, Akron, O.; I. B. Shallenberger, Latrobe Pa.; George Alston Smith, Syracuse, N. Y.; Muir B. Snow, Detroit.

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H. A. Brassert & Co., Chicago, engineers and contractors, have received an order from E. I. duPont de Nemours & Co. Inc., Wilmington, Del., for an automatic strainer to be installed in its plant at Gibstown, N. J.

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Neilsen-Bruening Engineering Co., Beloit, Wis., recently incorporated, has acquired the Beloit Mfg. Co., and moved its operations to that plant. Its products include draft gages and boiler pumps and it also does a general machine shop business.

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Heller Bros. Tool Works, Newcomerstown, O., has started a night shift of 75. The plant now employs over 400 workers, 52 having been added since July 1.

Equipment

Sales Hold in Good Volume; Japan Places Some Orders

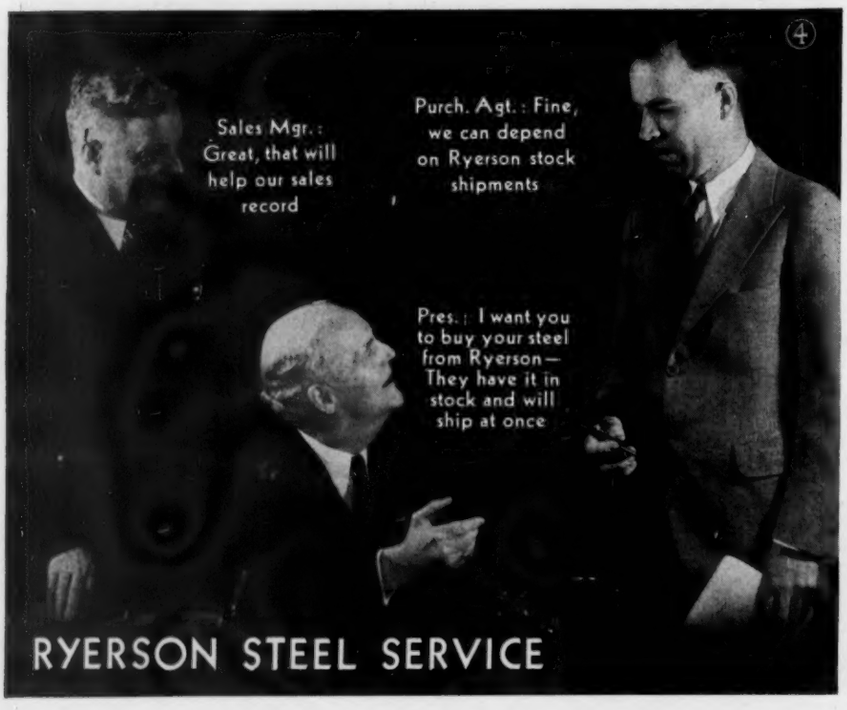
New York—A fair volume of machinery and equipment is being figured. Orders generally are limited to one or two tools at a time with repair part business steady. Japan has placed some orders with eastern sellers. Consolidated Machine Tool Corp., Rochester, is low on an engine lathe for the Mare Island navy yard. Kinsbury Machine Works, Philadelphia, took an order for thrust bearings for the navy at $13,395.20 and the Aldrich Pump Co., Allentown, Pa., main condensate pumps and spares at $48,174.

Boston — Shop activity holds to the current recent rate, although the midsummer months are generally a slackening period. A few shops are running nearly full schedules. Industrial demand with ball bearing plants is heavier and Japan has closed on equipment for an automotive works, some of the business being placed in New England. Reed-Prentice Corp., Worcester, is low on six engine lathes for the navy department, two for the Charlestown shops. France has bought some grinding machinery in this district. Textile machinery builders are the most active, several Massachusetts companies having sold complete units for installment in the South.

Pittsburgh—A decline in the bookings of steel mill rolls has been the only feature the past week in the equipment market inasmuch as the buying on some important programs involving heavy installations of rolling mills is still being deferred. Three large tin mills, which a leading equipment builder in this district booked several months ago, are about ready for delivery. A large volume of repair work in open-hearth and finishing mill departments has been completed but reports are heard of preparations to blow in more blast furnaces and prepare more mill capacity for a further rise in operations in the early fall season.

Chicago — Machinery and plant equipment sales and inquiry show additional improvement. Better activity in larger equipment as well as small tools is regarded as a reflection of rising industrial operations and prospects of higher prices. A fairly large volume of work is on inquiry, pending business having accumulated more rapidly during the past 30 days than previously. Chicago Great Western railroad has closed on a list of six tools pending since last fall, including a shaper, press and lathes. Inland Steel Co. has placed a few tools, with a larger list pending for a new maintenance shop. Small tools are in good demand from a diversified list of metalworking plants, including farm implement manufacturers. Electric motor prices have been advanced 10 per cent on general purpose types and 15 per cent on fractional-horsepower sizes.

Cleveland—Equipment sales are holding in good volume although a silght tapering off is expected during August. The 10 per cent increase in machine tool prices effective July 1 has had a slowing effect upon sales and inquiries. Builders are attempting to adjust plant forces to a 35-hour week in conformance with the blanket industrial code, pending submission of a code by the Machinery and Allied Products institute, with which most machine manufacturers are affiliated. Four turret lathes have been shipped to Japan by a local builder; two more have been ordered for the same destination.


4
Sales Mgr.: Great, that will help our sales record
Purch. Agt.: Fine, we can depend on Ryerson stock shipments
Pres.: I want you to buy your steel from Ryerson— They have it in stock and will ship at once
RYERSON STEEL SERVICE

Warehouse

Sheet Prices Moving Up; Buying Rate Holding Well

Pittsburgh—Higher sheet prices are in effect and warehouses have adopted the levels announced in STEEL, July 24. Jobbers are holding 2.95c, base, on cold-drawn bars and generally are able to obtain 2.60c, base, on hot-rolled bars and small shapes. Warehouse buying still is good and shipments are ahead of June.

Cleveland—Warehouse sales here have tapered slightly, though reports to nut and bolt manufacturers indicate jobbers throughout the country who stocked up recently have increased their sales. Prices are steady.

Chicago—While sales showed their usual slackening at the end of the month, July business compared favorably with that of June and jobbers anticipate continued good activity during August. Prices are unchanged.

New York — After a long period of confused prices on bolts, nuts and rivets, a leading jobber has taken the lead in an effort to steady prices at 65 off for keg or case quantities with 10 added for smaller lots. Hot galvanized bolts and nuts are quoted firm at 50 off.

Philadelphia — While warehouse buying has lessened somewhat from last month the rate of decline is smaller than in other years. Prices generally are firm.

Detroit—Warehouse business in iron and steel shows little change from the June rate and indications are that August will be on a similar basis. The general expectation is for additional activity in the fall. Prices are generally unchanged.

Cincinnati—Warehouses here have increased quotations on No. 24 galvanized sheets from 4.00c to 4.15c, other prices remaining unchanged. Volume has shown no midsummer decrease, holding closely to the June rate.

St. Louis—Sales by iron and steel warehouses are holding well, with no evidence of seasonal decline.

Sheet Bar Demand Heavy

Semifinished Prices, Page 42

Demand for sheet bars has improved, with tin mills calling for heavy tonnages. Sheet bars, billets and slabs are $26, Pittsburgh, Youngstown, O., and Cleveland, with the probability that this price will be filed under the steel code. Several forging billet orders were placed in the Pittsburgh district last week at $31. Wire rods are $35 for the balance of the quarter, with skelp, 1.60c, Pittsburgh.

Warehouse Quotations at Leading Centers, in Cents Per Pound

(All Philadelphia prices subject to quantity differentials, except reinforcing and Swedish bars)

STEEL BARS □

Baltimore*	2.45c
Boston††	2.50c
Buffalo	2.95c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Cleveland	2.75c
Detroit	2.85c
Houston	2.40c
Los Ang.	3.30c
New Orleans	2.65c
New York‡ (d)	3.10c
Philadelphia	2.45c
Pittsburgh	2.50c-2.60c
Portland	3.15c
San Fran.	3.15c
Seattle	3.00c
St. Louis	3.00c
St. Paul	3.00c
Tulsa	3.25c

IRON BARS □

Baltimore	2.35c
Boston††	2.70c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Detroit	2.85c
New York‡(d)	3.10c
Philadelphia	2.45c
St. Louis	3.00c
Tulsa	3.25c

REINFORC. BARS □

Baltimore	2.35c-3.00c
Boston	3.10c-3.25c
Buffalo	2.95c
Chattanooga	3.00c
Cincinnati	3.00c
Cleveland	2.00c-2.45c
Detroit	2.85c
Houston	3.00c
Los Ang. cl.	2.10c
New Orleans	2.75c
Los Ang., lcl	2.40c
New York	2.65c-3.10c
Phila.	2.62½c
Pittsburgh	2.50c-2.60c
San Fran. cl.	2.00c
San Fran. lcl	2.40c
Seattle	3.00c
St. Louis	3.15c
Tulsa	3.25c
Young.	2.30c-2.60c

SHAPES □

Baltimore*	2.45c
Boston††	2.60c
Buffalo	3.20c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland	2.95c
Detroit	3.10c
Houston	2.65c
Los Ang.	3.30c
New Orleans	3.50c
New York(d)	3.10c
Philadelphia	2.45c
Pittsburgh	2.85c
Portland	3.50c
San Fran.	3.15c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.25c
Tulsa	3.50c

PLATES □

Baltimore*	2.45c
Boston††	2.60c
Buffalo	3.20c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland, ¼ in. and thicker	2.95c
Cleve., 3/16-in	3.20c
Detroit	3.10c
Det., 3/16-in.	3.10c
Houston	3.00c
Los Angeles	3.30c
New Orleans	3.50c
New York (d)	3.30c
Philadelphia	2.45c
Phila. floor	5.10c
Pittsburgh	2.85c
Portland	3.50c
San Fran.	2.80c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.25c
Tulsa	3.50c

NO. 10 BLUE □

Baltimore*	2.70c
Boston††	2.35c
Buffalo	3.10c
Chattanooga	3.44c
Chicago	2.75c
Cincinnati	3.05c
Cleveland	2.75c
Det., 8-10 ga.	2.90c
Houston	3.35c
Los Ang.	3.40c
New Orleans	3.25c
New York	3.00c
Portland	4.25c
Pitts.**	2.75c
San Fran.	3.33c
Seattle	3.50c
St. Louis	3.00c-3.15c
St. Paul	3.45c
Tulsa	3.70c

NO. 24 BLACK □

Balt.*†	3.25c
Boston††	3.45c
Buffalo	3.25c
Chattanooga	3.50c
Chicago	3.45c
Cincinnati	3.60c
Cleveland	3.25c
Detroit	3.30c
Los Ang.	3.80c
New York	3.65c
Pitts.**	3.40c
Portland	4.75c
San Fran.	3.95c
Seattle	4.25c
St. Louis	3.70c
St. Paul	3.695c
Tulsa	4.75c

NO. 24 GAL. SHEETS □

Balt.*†	3.75c
Buffalo	3.75c
Boston††	4.00c
Chattanooga	3.95c
Chicago	4.00c-4.10c
Cincinnati	4.00c
Cleveland	3.85c
Detroit	3.50c
Houston	3.57c
Los Ang.	4.00c
New Orleans	4.25c
New York	4.00c
Pitts.**	3.75c-4.00c
Portland	5.25c
San Fran.	4.55c
Seattle	4.75c
St. Louis	4.25c
St. Paul	4.19c
Tulsa	5.10c

†BANDS □

Baltimore	2.75c
Boston††	3.00c
Buffalo	3.30c
Chattanooga	3.20c
Chicago	2.95c
Cincinnati	3.20c
Cleveland	3.00c
Det. 3/16-in. & lighter	3.15c
Houston	2.85c
Los Ang.	3.80c
New Orleans	3.00c
New York(d)	3.30c
Philadelphia	2.75c
Pittsburgh	2.95c
Portland	3.85c
San Fran.	3.15c
Seattle	3.50c
St. Paul	3.20c
Tulsa	3.45c
St. Louis	3.20c

†HOOPS □

Baltimore	2.65c
Boston	4.90c
Buffalo	3.55c
Chicago	3.50c
Cincinnati	3.75c
Det. No. 14 & lighter	3.65c
New York	3.30c
Philadelphia	3.00c
Pittsburgh	3.60c
Seattle	5.00c
St. Paul	3.75c

COLD FIN. STEEL □

Baltimore (c)	3.33c
Boston (g)	3.60c
Buffalo	3.00c
Chattanooga*	3.65c
Chicago	3.00c
Cincinnati	3.32c
Cleveland	2.95c
Detroit	3.15c
Los Ang.	5.50c
New Orleans	4.25c
Philadelphia	3.35c
Pittsburgh	2.95c
Portland (f)	4.50c
San Fran.(d)	5.50c
Seattle (f)	4.50c
St. Paul	3.20c
St. Louis	3.36c
Tulsa	4.65c

COLD ROLL. STRIP □

Boston 0.100 in., 500 lb lots	5.20c
Buffalo	5.25c
Chicago (b)	5.65c
Cincinnati	5.80c
Cleve. (b)	5.55c
Detroit	5.40c
Phila. (c)	4.55c
New York	4.55c

(a) Rounds, hex, only.
(b) Net base straightening, cutting boxing 1 ton or more.
(c) Plus mill, size and quantity extras.
(d) Minus quant. diff.
(e) New mill classif.
(f) Rounds only.
(g) Bessemer analysis extras included.

‡Domestic bars.
*Plus quan. extras.
**Under 25 bundles.
*†50 or more bundles.

†New extras apply.

††Base 40,000 lbs., extras on less.

Prices at Detroit, Cleveland, New York, Chicago, Pittsburgh Cincinnati, Chattanooga and St. Louis on heavier lines are subject to new quantity differentials:
399 pounds and less, up 50c; 400 to 999 pounds, base; 1000 to 4999 pounds, 20c off; 5000 to 9999 pounds, 40c off; 10,000 to 39,999 pounds, 60c off; 40,000 pounds and over 75c off.

Nonferrous Mill Products

Base price cents per pound f.o.b. mill except otherwise specified. Copper and brass product prices based on 9.00c, Conn., for copper

Sheets	
Yellow brass (high)	14.00
Copper, hot rolled	15.62½
Lead sheets, cut to jobbers	8.25
Zinc sheets (100-lb. base)	9.00
Tubes and Pipes	
Seamless yellow brass (high)	15.87½
Seamless copper	16.12½
Rods	
Yellow brass (high, full turning)	11.75
Naval brass	11.87½
Anodes	
Copper, untrimmed	14.00
Wire	
Yellow brass (high)	14.25

Old Metals

Dealers' buying prices, cents lb

No. 1 Composition Red Brass	
New York	5.00 to 5.25
Chicago	5.12½ to 5.37½
Cleveland	5.75 to 6.25
St. Louis	5.50 to 6.00
Heavy Yellow Brass	
New York	3.75 to 4.00
Heavy Copper and Wire	
New York	6.75 to 7.00
Chicago, No. 1	6.37½ to 6.62½
Cleveland	6.00 to 6.50
St. Louis	5.75
Composition Brass Borings	
New York	4.75 to 5.00
Yellow Brass Tubing	
Cleveland	4.50 to 5.00
Light Copper	
New York	5.50 to 5.75
Chicago	5.12½ to 5.37½
Cleveland	5.50 to 6.00
St. Louis	5.50
Light Brass	
Chicago	3.00 to 3.25
Cleveland	3.50 to 4.00
St. Louis	3.00 to 3.25
Lead	
New York	3.50 to 3.62½
Cleveland	3.00 to 3.50
Chicago	3.25 to 3.50
St. Louis	3.25 to 3.50
Zinc	
New York	2.25 to 2.50
Cleveland	2.25 to 2.75
Chicago	2.50 to 2.75
St. Louis	2.75 to 3.00
Aluminum	
Clippings, new, soft, Cleve.	13.00 to 14.50
Clippings, hard, Cleveland	9.00 to 10.00
Borings, Cleveland	5.00 to 6.00
Mixed cast, Cleveland	8.00 to 8.50
Mixed cast, St. Louis	8.00 to 8.50

Secondary Metals

Brass ingot, 85-5-5-5	9.00
Remelt aluminum No. 12	12.50 to 13.50

Metals

Copper, Lead and Zinc Remain Firm Despite Unsettlement—Tin and Antimony Are Easier

New York—Metal prices held firm last week with the exception of tin and antimony. The firm undertone in the copper, lead and zinc markets became more apparent despite the unsettling influences of declines in foreign exchange and quieter situation in commodities. This was due to reported further progress on codes which will involve higher prices, it is said.

Copper—Only light tonnages were booked by domestic consumers at the ruling price of 9.00c, Connecticut, at which level first-hands held firm for delivery through fourth quarter. Limited tonnages of resale metal at concessions of as much as ¼-cent appeared during the week but did not influence the position of producers. The copper code, on which producers are not yet entirely agreed, is understood to call for a 40-hour week and continued production at 20 per cent of capacity until stocks have been reduced to a more normal level. Copper products and brass ingot held unchanged but scrap was slightly easier. Foreign copper prices moved downward.

Lead—Demand was in appreciably smaller volume last week but prices held steady. August requirements are well covered. Some business has been booked for September although books are not officially opened until Tuesday. July shipments were approximately 43,000 tons, the heaviest tonnage since late 1930.

Zinc—Sales were in light to fair volume with most of the business representing contract releases. Most sellers held prime metal at 5.00c, East St. Louis, but reports of shading were heard. One sale was reported, however, at 5.25c for delivery through the end of the year. Interests in the trade are looking for higher prices under the code which will be submitted soon.

Tin—Trading was more active as prices tended downward with declines in the rate of exchange on the pound sterling. Prices at the close of the week were the lowest in approximately a month.

Antimony—Reports of easiness in China brought a slight recession in prices quoted in this country.

Aluminum—Remelt grades continue strong. Virgin metal was quiet.

Distillates Firm, Active

New York—Demand for distillates is brisk, few distributors being in a position to take spot business. Current requirements are considerably ahead of production. Prices are firm and unchanged. Other coke oven by-products are less active, with prices steady.

Coke By-Products

Per Gallon Producers' Plants, Tank Lots	**Spot**
Pure benzol	$0.22
90 per cent benzol	0.22
Toluol	0.30
Solvent naphtha	0.26
Commercial xylol	0.26
Per Pound at Producers' Plants in 250-Pound Drums	
Phenol	0.153 to 0.173
Per Pound at Producers' Plants	
Naphthalene flakes	4.75 to 5.75
Naphthalene balls	4.75 to 5.75
Per 100 Pounds Atlantic Seaboard	
Sulphate of ammonia	$1.20

Quicksilver Firmer

New York — Quicksilver prices again are firmer. Small lots are $65 to $66, a virgin flask of 76 pounds. The minimum now reported on round lots is $64.50.

Nonferrous Metal Prices of the Week, Cents a Pound

Spot unless otherwise specified

	Copper—Electro., del. Conn.	Copper—Lake, del. Midwest	Copper—Casting, refinery	Straits Tin New York Spot	Straits Tin New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 98-99%	Antimony Spot, N. Y.	Ingot Nickel
July 22	9.00	9.12½	8.75	45.50	45.65	4.50	4.35	5.00	*22.90	7.50	35.00
July 24	9.00	9.12½	8.75	46.00	46.10	4.50	4.35	5.00	*22.90	7.50	35.00
July 25	9.00	9.12½	8.75	46.37½	46.50	4.50	4.35	5.00	*22.90	7.50	35.00
July 26	9.00	9.12½	8.75	45.75	45.85	4.50	4.35	5.00	*22.90	7.50	35.00
July 27	9.00	9.12½	8.75	45.25	45.35	4.50	4.35	5.00	*22.90	7.50	35.00
July 28	9.00	9.12½	8.75	45.12½	45.25	4.50	4.35	5.00	*22.90	7.50	35.00

*Nominal quotation. Market range 19.90c to 22.90c.

Pacific Coast

Current Selling Better Than Year Ago—Large Tonnage for Transmission Lines Pending—Warehouse Prices on Higher Level—Pipe Market Active—Steel Ship Bids Asked

San Francisco—(*By Air Mail*)—Awards of structural shapes and plates in the past week were the largest in over a month and reinforcing bar lettings largest of any week this year. Interest centers in opening of bids on 30,000 tons of structural steel for transmission lines for the water and power department, Los Angeles, on which Tower Builders Inc., Los Angeles, is low. The tendency of prices is to advance and while as low as 1.75c, c.i.f., is still named on plates it is thought 2.10c will prevail within the next few days.

Reinforcing bar awards aggregated over 10,000 tons and brought the total for the year to 43,090 tons, compared with 32,642 tons for the same period a year ago. Pacific Coast Steel Corp. took 8700 tons for work in connection with the east and west sub-structures of the San Francisco-Oakland bridge and 500 tons for a brewery in Los Angeles. Truscon Steel Co. secured 200 tons for a brewery in Vernon, Calif., and Soule Steel Co. booked 500 tons for two buildings in Los Angeles.

Commercial Shearing & Stamping Co., Youngstown, O., was awarded 1790 tons of plates for tunnel linings for the metropolitan water district, Los Angeles. Keen interest now prevails on the call for bids Aug. 15 for 4200 to 5100 tons of plates for the Pine Canyon pipe line, Pasadena, Calif.

Among larger structural awards placed were 700 tons for the Bullock's store addition and a loft building in Los Angeles, taken by Consolidated Steel Corp. McClintic-Marshall Corp. booked 500 tons for tunnel linings for Los Angeles and Commercial Shearing & Stamping Co., 210 tons for the same project.

Seattle Jobbers Advance

Seattle—Effective July 20, Seattle wholesale jobbers raised prices of sheets 25 cents and bars, plates and shapes 15 cents. This places the local market on a parity with Portland wholesalers, who announced similar increases earlier in the month. However, Portland still maintains a differential on foreign steel, 2.75c on bars and shapes against a base price of 3.15c for domestic materials. Jobbing sales are better.

Alderwood water district, near Seattle, received a low figure of $161,095 for a system involving about 1400 tons of 4 to 18-inch pipe. Seattle opened bids this week for the Denny Way pipe job, involving 1112 tons of 24 to 30-inch cast iron pipe, three miles of trolley wire and 200 car wheels. Camas, Wash., opened bids July 24 for 2500 feet of 6-inch cast iron pipe. Universal Pipe & Radiator Co., New York, was low on 400 tons of 10 and 18-inch cast iron pipe for McNeil Island, Wash., federal prison.

Pacific coast shipyards are interested in bids Aug. 31 for a 7000-ton freight and passenger steamer for Swayne & Hoyt, San Francisco.

Structurals and machinery totaling 170 tons passed through Seattle this week bound for Fairbanks, Alaska, for buildings for the Pacific Alaska Airways.

Austin Co., Seattle office, has a contract to build an addition to the plant of the Continental Can Co., 601 Myrtle street, Seattle, involving 175 tons of reinforcing 20 tons of shapes.

Steel in Europe

Entente Export Quota 500,000 Tons Month—Markets Quiet

London—(*By Cable*)—General improvement in steel and iron markets continues at a gradual rate. Some low-priced Middlesbrough pig iron has been sold for shipment to Italy. Continental semifinished steel has been offered in the British market at competitive prices but buying has been limited. Outlook for tin plate exports is less satisfactory. Some inquiries have been received from South America.

Reports from the Continent are that export trade is dull and some Belgian mills are working part time. A new large Belgian selling organization has been formed. The steel entente has fixed the general export quota on a basis of 500,000 tons of raw steel monthly.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, July 27

Export Prices f.o.b. Ship at Port of Dispatch—By Cable (or Radio)

	British gross tons U. K. ports	£ s d	Continental Channel or North Sea ports, metric tons Gold parity, $4.8665	£ s d	£ s d
PIG IRON					
Foundry, 2.50-3.00 Silicon	$13.25	2 18 6	$8.27		1 14 0
Basic bessemer	12.23	2 14 0*	7.30		1 10 0
Hematite, Phos. .03-.05	13.36	2 19 0	.....		.....
SEMIFINISHED STEEL					
Billets	$22.65	5 0 0	$11.44		2 7 0
Wire rods, No. 5 gage	33.98	7 10 0	21.90		4 10 0
FINISHED STEEL					
Standard rails	$35.11	7 15 0	$26.77		5 10 0
Merchant bars	1.34c	6 12 6	.66c		3 0 0
Structural shapes	1.49c	7 7 6	.61c		2 15 0
Plates, †¼ in. or 5 mm.	1.67c	8 5 0	.86c		3 18 6
Sheets, black, 24 gage or 0.5 mm.	1.82c	9 0 0	1.29c		5 17 6
Sheets, gal., 24 gage, corr.	2.22c	11 0 0	1.60c		7 5 0
Bands and strips	1.57c	7 15 0	.80c		3 12 6
Plain wire, base	1.77c	8 15 0	1.18c		5 7 6
Galvanized wire, base	2.12c	10 10 0	1.38c to 1.40c		6 5 6 to 6 7 6
Wire nails, base	2.42c	12 0 0	1.27c		5 15 0
Tin plate, box 108 lbs.	$ 3.91	0 17 3	.....		.....

British ferromanganese $68 delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d ($43.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

	£ s d		French Francs		Belgian Francs		Reich Marks	
Fdy. pig iron, Si. 2.5	$14.16	3 2 6(a)	$11.19	210	$11.46	300	$20.70	63
Basic bessemer pig iron	13.36	2 19 0(a)*	10.39	195	11.46	300	22.83	69.50
Furnace coke	3.01	0 13 3	6.40	120	4.20	110	6.32	19.25
Billets	22.65	5 0 0	21.59	405	16.81	440	31.70	96.50
Standard rails	1.67c	8 5 0	1.67c	697	1.87c	1,100(b)	1.97c	132
Merchant bars	1.39c	6 17 6	1.34c	560	.91c	535	1.64c	110
Structural shapes	1.77c	8 15 0	1.32c	550	.91c	535	1.60c	107.50
Plates, †¼-in. or 5 mm.	1.72c	8 10 0	1.63c	680	1.15c	675	1.89c	127
Sheets, black	2.02c	10 0 0§	2.04c	850‡	1.28c	750‡	2.15c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm.	2.42c	12 10 0	3.48c	1,450	2.47c	1,450	5.51c	370
Plain wire	1.77c	8 15 0	2.71c	1,130	2.21c	1,300	2.64c	177
Bands and strips	1.92c	9 10 0	1.49c	620	1.15c	675	1.89c	127

*Basic. †British ship-plates. Continental, bridge plates. §24 ga. ‡1 to 3 mm. basic price.
British quotations are for basic open-hearth steel. Continental usually for basic-bessemer steel.
a del. Middlesbrough. b Since January

Construction and Enterprise

New York

BROOKLYN, N. Y.—Apex Screw Machine Products Co. Inc. has been incorporated with $20,000 capital to manufacture screw machine products, by Isidor Robin, 50 Court street, Brooklyn, N. Y.

BUFFALO—German-American Brewing Co. has had plans made for a $700,000 addition to and modernization of its plant here, work to start at once. John E. Johnson Construction Co., Buffalo, has the general contract.

BUFFALO—Superior Foundry Inc. has been incorporated with $10,000 capital to operate a metal foundry, by Chester H. Long, 24 Ross avenue, and associates.

NEW YORK—Union Mould & Metal Corp. has been incorporated with 200 shares no par value to manufacture metal products, by Louis Broido, 551 Fifth avenue.

NEW YORK—Sackler Bros. Metal Corp. has been incorporated with $5000 capital to manufacture metal products, by Bernhard Steinman, 1131 East Thirteenth street, and associates.

NEW YORK—Acme Scrap Iron & Metals Corp. has been incorporated with 200 shares no par value to deal in scrap metals, by Israel Abramson, 207 Seeley street, Brooklyn, N. Y., and associates.

Pennsylvania

CREIGHTON, PA.—Duplate Corp., Pittsburgh, is building an addition to its plant here to cost $300,000. The plant will be increased by about 25,000 square feet. Its product is non-shatterable glass.

DU BOIS, PA.—DuBois Brewing Co. will build a new bottling house and intsall equipment, cost to be about $100,000.

Ohio

MARYSVILLE, O.—Fisher Brass Co. is building a 1-story addition to its plant, 36 x 72 feet.

Indiana

AUBURN, IND.—Assets of the Sterlite Foundry & Mfg. Co., Auburn, Ind., have been sold under court order by the receiver, to John A. Rendle, Detroit, a large stockholder.

Michigan

DETROIT—Air Conditioning Corp. has been incorporated with 25,000 shares no par value to manufacture air conditioning units, by Paul W. Bruns, 3084 East Grand boulevard, Detroit.

DETROIT—Ternstedt Mfg. Co., 6307 West Fort street, is taking bids on a 1-story automobile hardware factory addition on McGregor avenue. Fisher Body Co. construction engineering department, General Motors building, is engineer.

L'ANSE, MICH.—Tillson Bearing Corp. has been incorporated with 50,000 shares no par value to manufacture mechanical appliances, by Chauncey St. Germain, Baraga, Mich.

MUSKEGON, MICH.—West Michigan Dock & Market Corp. has given a contract to Frick Ice Machine Co., Waynesboro, Pa., at about $70,000, for refrigeration equipment in its cold-storage building.

Illinois

CHICAGO—R. G. Hind & Co., 2755 West Thirty-first street, has been incorporated with 200 shares no par value to manufacture iron, steel and metal products, by Frank H. T. Potter, 1 LaSalle street.

CHICAGO—Ritter Dental Equipment Co., 5 South Wabash avenue, has been incorporated with 500 shares no par value to manufacture dental equipment, by Alden, Latham & Young, 134 South LaSalle street.

CHICAGO—Enterprise Oil Burner Sales Co., 1461 South Michigan avenue, has been incorporated with 1000 shares no par value to manufacture oil burners, by Blacksten & Lansing, 160 North LaSalle street.

CHICAGO—Century Die Casting Co., 188 West Randolph street, room 1203, has been incorporated with $20,000 capital to manfacture die castings in various metals, by Lester L. Bauer, 188 West Randolph street.

CHICAGO—F. R. Steiner Mfg. Co., 2300 North Oak Park avenue, has been incorporated with 20 shares no par value to manufacture plumbing supplies, by Ignatz Spitz, 139 North Clark street, and associates.

CHICAGO—United Coin Mfg. Co. has been incorporated with 15 shares no par value to manufacture vending machines, by Cooney & Verhoeven, 69 West Washington street.

CHICAGO—International Rail Weld Corp., 310 South Michigan avenue, room 1512, has been incorporated with 50,000 shares no par value to manufacture railroad supplies, by Charles Aaron, 33 South Clark street.

Southern States

RED BAY, ALA.—Council will install pumping machinery and a 50,000 gallon elevated steel tank and other mechanical equipment in the new municipal waterworks plant.

SHEFFIELD, ALA.—City council has appropriated $150,000 for a municipal electric light plant and will start construction soon.

TALLADEGA, ALA.—A contract has been let for a concrete and frame building for use as a machine shop on the property of the Newbury foundry, owned by the Newbury Mfg. Co., Monroe, N. Y. No announcement has been made as to reopening of the foundry for production.

LOUISVILLE, KY.—Kingham Trailer Co., Floyd and Gaulbert streets, has bought six acres and will build a plant with 80,000 square feet floor space for the manufacture of automobile trailers at Fifteenth and Hill streets, to cost $80,000.

SHREVEPORT, LA.—Spartan Refining Co. has let contract to Alco Products Inc., Dunkirk, N. Y., a subsidiary of American Locomotive Co., for construction and installation of new cracking and distillation units

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Billets - Plates - Sheets - Flanged and Dished Heads - Floor Plates - Stampings
IN STANDARD AND SPECIAL ANALYSES

CENTRAL IRON & STEEL COMPANY
HARRISBURG, PA.

for its refinery here at a cost of about $500,000.

STARKVILLE, MISS.—Universal Electric Co., Balter building, New Orleans, has been given a contract to build and equip an electric light and power plant for the city at a cost of about $100,000.

Oklahoma

MUSKOGEE, OKLA.—National Airplane & Motor Co. has been incorporated with $3000 capital by John B. Fink, 1614 West Broadway.

OKLAHOMA CITY, OKLA.—Triangle Producing & Refining Co. has been incorporated to operate an oil refinery, by Ray L. Waldo, 2532 N.W. Seventeenth street, president and manager.

OKLAHOMA CITY, OKLA.—Bonded Refining Co. has been incorporated with $25,000 capital to build an oil refinery, by G. A. Matteson, 1800 N. W. Fifteenth street.

TULSA, OKLA.—Assets of the Oklahoma Union Railway Co., Tulsa, Okla., an electric line running to Sapulpa, Okla., 14 miles, will be sold at receiver's sale, Aug. 5, by J. A. Frates and F. A. Bodavitz, receivers.

Texas

DALLAS, TEX.—Uni-V-Pump Co. has been incorporated with $10,000 capital to manufacture metal products, by W. T. Graham and associates.

DALLAS, TEX.—Magnolia Petroleum Co. has sold its oil field properties in the Corsicana, Tex., district to Coffield & Guthrie, Rockdale, Tex. The sale included lines, pumping stations and field power plants. Improvements are planned by the new owners. W. S. Guthrie, Rockdale, Tex., is in charge.

FORT WORTH, TEX.—Lee's Auto Repair Shop has been established at 115 West Twenty-fifth street.

HOUSTON, TEX.—Allen Bros., J. W. Allen manager, have established an iron foundry at 2605 Polk avenue.

HOUSTON, TEX.—A. I. Martin Welding Works has established a shop at 1412 San Jacinto street for general repair and oil field portable work.

HOUSTON, TEX.—Houston Auto Maintenance Co. has been incorporated with $3600 capital to operate automotive repair shops, by J. E. Cunningham, 3115 Webster street, Houston, Tex.

HOUSTON, TEX.—Todd Shipyards Corp., J. D. Reilly, president, 25 Broadway, N. Y., plans a ship repair and dry dock plant with three large piers and three dry docks in the port of Houston. A loan of $1,100,000 from the R. F. C. has been approved.

LIVINGSTON, TEX.—Polk County Engineering Co., Livingston, Tex., has been given a contract for building a pipe line from Livingston to the oil fields near here, including a 12-car loading rack and two 5000-barrel steel tanks. H. W. Turner is in charge of construction.

Wisconsin

EAU CLAIRE, WIS.—City council has authorized a $250,000 bond issue for a proposed new water supply system, plans for which are being drawn by Pearse, Greeley & Howson, engineers, 6 North Michigan avenue, Chicago.

EAU CLAIRE, WIS.—National Pressure Cooker Co., 1515 Ball street, has let contracts for remodeling and enlarging its foundry at cost of $20,000.

MILWAUKEE—Industrial Heating & Engineering Co., 828 North Broadway, has been awarded the contract for remodeling and enlarging the power plant of the national soldiers' home here at $108,736.

RHINELANDER, WIS.—George Hilgerman, 4622 Casco avenue, has taken over the plant of the Rhinelander Brewing Co. and will remodel it at cost of $80,000 Cream City Boiler Co., Milwaukee, has been given contract for new boilers and tanks.

Minnesota

ELY, MINN.—City council is considering construction of a steam power plant for a municipal central heating station and distributing system, to cost $300,000. Joseph Veranth is city engineer.

Pacific Coast

PASCO, WASH.—Baar & Cunningham, engineers, Portland, Oreg., have been retained to prepare plans and specifications for a municipal filtration plant.

SEATTLE—Cold Springs Brewing Co., T. D. Murray, attorney, has under consideration three sites for a proposed brewery to cost about $65,000.

SEATTLE — Horluck Brewing Co. plans to build a 5-story fireproof brewhouse at 970 Mercer street, 31 x 50 feet. Russell Ullrich is company engineer.

SEATTLE—Allied Metals Corp. has been incorporated with $100,000 capital by Harry T. Anderson and Owen A. Thomas.

SEATTLE—National Brewing Co. Inc., M. D. Keeney, vice president and general manager, is remodeling a former dairy plant at Rainier avenue and Dakota street at a cost of $75,000 for use as a brewery, with annual capacity of 30,000 barrels. Fred B. Stephen, Smith tower, is architect.

TACOMA, WASH.—Columbia Breweries Inc. will build a 4-story addition 32 x 37 feet to its brewhouse at 2118 South C street, to cost $30,000. Paul Bergfield is architect, and J. E. Wells, general contractor.

VANCOUVER, WASH.—Plant of the Star Brewing Co. has been sold by federal court to Hemrich Brewing Co., Seattle, and will be reconditioned and re-equipped for use as a brewery.

Dominion of Canada

MONCTON, N. B.—Record Stove & Furnace Co. plant has been severely damaged by fire.

NIAGARA FALLS, ONT.—Canadian Ohio Brass Co., subsidiary of Ohio Brass Co., Mansfield, O., plans erection of a foundry and factory on Stone road.

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KIEFER SHEETING & PAINTING CO.

Corrugated Sheeting Erection and Repairs
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House Bldg. - - - - - Pittsburgh, Pa.

STATISTICS OF IRON AND STEEL INDUSTRY

Compiled by department of commerce, except: Unfilled tonnage by United States Steel Corp.; foundry equipment orders by Foundry Equipment Manufacturers association; river traffic by United States engineer at Pittsburgh; electric power by department of interior, geological survey

Automobiles

Units

1932	Production —United States— Total*	Passenger cars	Canada Total
Jan.	119,344	98,706	3,731
Feb.	117,413	94,085	5,477
Mar.	118,959	99,325	8,318
April	148,326	120,906	6,810
May	184,295	151,683	8,221
June	183,106	160,103	7,112
July	109,143	94,678	7,472
Aug.	90,325	75,898	4,067
Sept.	84,150	64,735	2,342
Oct.	48,702	35,102	2,923
Nov.	59,557	47,293	2,204
Dec.	107,353	85,858	2,139
Year	1,370,678	1,134,372	60,816
1933			
Jan.	130,044	108,321	3,358
Feb.	106,825	91,340	3,298
March	109,949	99,225	6,632
April	180,667	152,939	8,255
May	218,303	184,578	9,396
June	253,322	211,448	7,323
6 Mo.	1,007,110	847,917	38,262

*Difference of total and passenger cars equals number of trucks. †Average monthly shipments, 1922-23-24 taken as 100. ‡Figures by American Institute of Steel Construction, from January, 1933, 75 per cent of industry reporting.

Fabricated Shapes†

Net Tons

1932	Bookings Tonnage	Per cent of capacity	Shipments Tonnage	Per cent of capacity
Jan.	48,400	12.1	65,600	16.4
Feb.	62,000	15.5	78,000	19.5
Mar.	64,400	16.1	82,400	20.6
April	64,800	16.2	68,400	17.1
May	90,800	22.7	72,400	18.1
June	86,800	21.7	83,200	20.8
July	69,200	17.3	83,600	20.9
Aug.	78,800	19.7	85,00	21.4
Sept.	111,200	27.8	90,800	22.7
Oct.	74,400	18.6	86,400	21.6
Nov.	51,600	12.9	76,000	19.0
Dec.	145,600	36.4	68,800	17.2
Year	948,000	19.8	942,400	19.6
1933				
Jan.	73,679	....	50,965	....
Feb.	50,955	....	46,168	....
March	71,393	....	54,948	....
April	46,095	....	50,387	....
May	42,600	....	63,968	....
June	81,910	....	64,809	....
6 Mo.	316,637	....	331,245	....

Fabricated Plates

Net Tons

1932	Bookings Total	Oil Storage Tanks	Miscellaneous
Jan.	17,613	4,783	12,124
Feb.	17,755	4,115	11,777
Mar.	12,564	1,161	10,022
April	14,074	1,406	11,167
May	11,788	2,310	9,356
June	18,383	2,808	10,209
July	12,485	3,661	6,586
Aug.	11,916	4,394	6,911
Sept.	11,013	3,753	6,801
Oct.	16,737	5,941	9,528
Nov.	7,873	1,446	6,065
Dec.	9,510	3,154	5,534
Year	161,810	38,976	109,085
1933			
Jan.	11,128	1,501	8,830
Feb.	16,588	8,347	7,660
March	8,903	1,270	6,787
April	9,502	2,938	6,291
May	16,243	2,858	8,133
June	39,958	20,894	13,951
6 Mo.	99,322	37,853	51,943

Railroad Locomotives

Units

1932	Shipments Domestic	Foreign
Jan.	..	..
Feb.	1	4
Mar.	..	3
April	8	..
May	13	2
June	17	..
July	9	..
Aug.	9	..
Sept.	9	4
Oct.	10	2
Nov.	8	..
Dec.	6	..
Year	80	15
1933		
Jan.	2	..
Feb.	7	..
March	2	..
April	1	..
May	1	..
June	2	2
6 Mo.	15	2

Foundry Equipment Order Index†

1932	
Jan.	20.5
Feb.	27.6
Mar.	27.5
April	13.7
May	18.0
June	14.2
July	18.7
Aug.	18.6
Sept.	11.9
Oct.	23.2
Nov.	11.5
Dec.	16.5
Year	....
1933	
Jan.	68.4
Feb.	16.1
March	9.8
April	19.4
May	25.7
June	45.5
6 Mo.	....

Malleable Castings

Net Tons

1932	Output	Shipments	Orders booked
Jan.	20,399	19,658	20,332
Feb.	19,834	19,432	17,808
March	17,844	19,392	16,235
April	15,461	16,847	16,185
May	16,597	18,075	16,463
June	15,018	16,450	13,330
July	9,447	11,359	8,658
August	6,804	8,631	7,776
Sept.	10,051	9,746	10,582
Oct.	12,274	11,615	12,850
Nov.	13,622	12,745	14,304
Dec.	14,128	14,366	14,504
Year	171,479	178,316	169,027
1933			
Jan.	12,577	14,248	12,404
Feb.	13,575	14,068	11,077
March	9,756	10,967	12,380
April	17,871	16,666	17,856
May	24,628	23,077	24,671
June	31,118	29,268	31,997
6 Mo.	110,689	109,213	111,543

Steel Castings

Net Tons

1932	Total bookings	Total production
Jan.	17,393	18,395
Feb.	17,015	18,759
March	16,503	20,433
April	12,801	17,474
May	11,342	14,463
June	12,765	12,839
July	9,301	11,460
August	10,147	12,331
Sept.	11,883	11,337
Oct.	11,896	12,480
Nov.	13,235	13,712
Dec.	13,283	13,886
Year	155,837	175,831
1933		
Jan.	12,942	13,951
Feb.	11,857	12,438
March	11,458	13,209
April	14,507	12,071
May	20,755	18,991
June	.....	.....
6 Mo.	.....	.....

Mechanical Stokers

—Sales—

1932	Fire tube boilers	Water tube boilers
Jan.	70	45
Feb.	63	26
March	60	23
April	80	15
May	41	30
June	65	48
July	70	44
August	99	38
Sept.	117	46
Oct.	96	21
Nov.	79	12
Dec.	78	20
Year	920	367
1933		
Jan.	50	13
Feb.	33	22
March	67	17
April	26	31
May	52	41
June	137	50
6 Mo.	365	174

Steel Furniture

Dollars, 000 omitted

1932	Business shipments	Shelving, shipments
Jan.	977	269
Feb.	807	229
March	780	259
April	753	190
May	653	196
June	671	177
July	521	155
August	543	141
Sept.	577	146
Oct.	622	142
Nov.	581	125
Dec.	610	135
Year	8,102	2,166
1933		
Jan.	582	121
Feb.	464	104
March	482	137
April	404	133
May	511	166
June	636	165
6 Mo.	3,081	830

Babbitt Metal

Pounds 000 omitted

1932	(a) Total production	(b) Sales
Jan.	1,743	1,251
Feb.	1,577	1,142
March	1,595	1,158
April	1,419	1,030
May	1,345	947
June	1,319	858
July	1,275	870
August	1,319	924
Sept.	1,406	1,103
Oct.	1,573	1,192
Nov.	1,265	944
Dec.	1,149	823
Year	16,990	12,412
1933		
Jan.	1,346	1,073
Feb.	1,117	917
March	1,134	941
April	1,544	1,270
May	2,110	1,785
June	2,327	1,877
6 Mo.	9,641	7,867

(a) by 40 plants. (b) by 30 manufacturers who produce for sale, including 5 who also report consumption of own metal.

Unfilled Tonnage

Tons

1932	United States Steel Corp. Unfilled orders	Net change	Per cent change
Jan.	2,648,150	87,203—	3.19—
Feb.	2,545,629	102,521—	3.88—
March	2,472,413	73,216—	2.87—
April	2,326,926	145,487—	5.83—
May	2,177,162	149,764—	6.44—
June	2,034,768	142,394—	6.54—
July	1,966,302	68,466—	3.36—
Aug.	1,969,595	3,293+	0.16+
Sept.	1,985,090	15,495+	0.78+
Oct.	1,977,040	11,950+	0.62+
Nov.	1,968,331	28,739—	1.45—
Dec.	1,958,140	161—	0.01—
Year	.....	...	.....
1933			
Jan.	1,893,644	69,495—	3.50—
Feb.	1,854,200	44,444—	2.30—
March	1,841,002	13,198—	0.70—
April	1,864,574	23,572+	1.27+
May	1,929,815	65,241+	3.49+
June	2,106,671	176,856+	9.16+
6 Mo.	.....	.....	....

Electric Power

Millions Kilowatt Hours Production*

1932	
Jan.	7,567
Feb.	7,023
March	7,323
April	6,790
May	6,650
June	6,563
July	6,547
Aug.	6,764
Sept.	6,752
Oct.	7,073
Nov.	6,952
Dec.	7,149
Year	83,153
1933	
Jan.	6,932
Feb.	6,285
March	6,674
April	6,461
May	6,954
June	6,178
6 Mo.	39,494

Coke

Net Tons Production

1932	By-Product	Beehive
Jan.	2,100,923	87,900
Feb.	1,935,780	85,800
March	2,039,391	87,400
April	1,833,391	56,000
May	1,742,517	45,000
June	1,536,712	41,200
July	1,523,422	38,200
Aug.	1,473,904	40,700
Sept.	1,544,491	45,700
Oct.	1,738,716	67,600
Nov.	1,751,581	81,400
Dec.	1,786,085	95,600
Year	21,166,913	772,500
1933		
Jan.	1,784,527	81,900
Feb.	1,638,817	84,100
March	1,666,035	93,300
April	1,656,183	47,000
May	1,921,257	45,003
June	2,241,432	50,100
6 Mo.	10,908,251	403,700

Steel Barrels

Units

1932	Production	Shipments
Jan.	359,685	352,135
Feb.	367,472	369,882
March	452,294	453,621
April	447,379	452,191
May	427,299	425,662
June	651,916	654,561
July	352,614	353,336
Aug.	362,993	360,509
Sept.	395,640	398,241
Oct.	422,637	417,490
Nov.	373,190	376,647
Dec.	300,570	307,372
Year	4,920,117	4,928,307
1933		
Jan.	292,201	292,609
Feb.	269,755	272,432
March	373,340	371,945
April	401,086	402,506
May	465,418	467,695
June	572,851	568,437
6 Mo.	2,374,651	2,375,624

River Traffic

Net Tons

1932	Allegheny	Monongahela	Ohio
Jan.	.....	25,327	45,199
Feb.	2,200	20,089	40,737
March	550	32,234	33,254
April	531	23,849	32,972
May	2,550	23,941	28,257
June	3,611	18,291	27,305
July	1,400	13,677	22,895
Aug.	3,400	26,390	43,621
Sept.	1,200	18,831	28,557
Oct.	21,280	24,305	40,399
Nov.	23,225	29,851	45,735
Dec.	7,200	28,169	30,048
Year	67,117	284,954	418,990
1933			
Jan.	1,627	11,724	18,002
Feb.	1,656	17,904	23,614
March	425	19,546	32,917
April	3,025	35,795	37,191
May	4,400	39,890	46,038
June	815	58,179	56,484
6 Mo.	11,948	183,048	214,246

*For public use